

ENVIRONMENTAL ASSESSMENT BOARD



ONTARIO HYDRO DEMAND/SUPPLY PLAN HEARINGS

VOLUME: 73

DATE: Wednesday, October 16, 1991

BEFORE:

HON. MR. JUSTICE E. SAUNDERS	Chairman
DR. G. CONNELL	Member
MS. G. PATTERSON	Member

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ENVIRONMENTAL ASSESSMENT BOARD
ONTARIO HYDRO DEMAND/SUPPLY PLAN HEARING

IN THE MATTER OF the Environmental Assessment Act,
R.S.O. 1980, c. 140, as amended, and Regulations
thereunder;

AND IN THE MATTER OF an undertaking by Ontario Hydro
consisting of a program in respect of activities
associated with meeting future electricity
requirements in Ontario.

Held on the 5th Floor, 2200
Yonge Street, Toronto, Ontario,
on Wednesday, the 16th day of October,
1991, commencing at 10:00 a.m.

VOLUME 73

B E F O R E :

THE HON. MR. JUSTICE E. SAUNDERS	Chairman
DR. G. CONNELL	Member
MS. G. PATTERSON	Member

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Submissions:

By Mr. B. Campbell 13130

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PAUL FRANK VYROSTKO,
JOHN KENNETH SNELSON; Resumed. 13172

Cross-Examination by Mr. Watson 13172

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1 ---Upon commencing at 10:04 a.m.

2 THE CHAIRMAN: Please be seated.

3 Mr. Campbell was about to continue his
4 reply submissions on the question of the evidence
5 before the Hydraulic Panel.

6 We received this morning, just a few
7 minutes ago actually, a memorandum from IPPSO. Has
8 that been generally circulated, Mr. Shepherd?

9 MR. SHEPHERD: Yes, Mr. Chairman.

10 THE CHAIRMAN: I will just make a note of
11 that on the record so that anyone who reads it will
12 know that it has occurred.

13 Mr. Campbell? Did you get a copy of it,
14 Mr. Campbell?

15 MR. B. CAMPBELL: Yes, I did, Mr.
16 Chairman, about a quarter after 9:00, and things being
17 what they are, I haven't had a chance to go through it
18 in any significant detail.

19 I understand the approach is to try and
20 help identify the line for evidence by asking a series
21 of questions which should help to demonstrate it, and I
22 think that that might well be a useful approach, and I
23 anticipate speaking to my friends and perhaps getting a
24 group of those together who are most directly
25 interested and perhaps go through the questions, and if

1 we could come up with some sort of agreed list of those
2 or a list of those where there is general agreement as
3 to how each of those questions would fit planning
4 versus site- or project-specific I think it might be
5 quite helpful to you.

6 There will be, I think, a number where we
7 agree and there may be a few where we disagree, but it
8 would help illustrate and focus perhaps a little bit of
9 the debate on this evidentiary matter.

10 Really what I am addressing and what has
11 been addressed primarily is coming to grips first on
12 the approvals level, and I think this exercise might be
13 quite useful to you if we could complete it relatively
14 quickly this week.

15 THE CHAIRMAN: That is the first thought
16 of course that comes to my mind.

17 I see that most of the parties that made
18 submissions are here this morning, so that there is --
19 I mean, I think this is a very important and difficult
20 issue, and any time spent on it would be, I think,
21 usefully spent, but, on the other hand, we have some
22 problems because of the nature of the scheduling.

23 So if such a meeting could be held even
24 today I think we would be prepared to give some time
25 for it.

1 MR. B. CAMPBELL: Just a moment.

2 ---Off the record discussion.

3 MR. B. CAMPBELL: Having consulted with
4 my friends on the matter, there seems to be some sort
5 of consensus that it might be sensible if I made my
6 submissions on basically what I will call approvals
7 matters and then we took an hour and a half right then
8 and went away and went through the list and brought it
9 back to you and said: Okay, here's the ones where we
10 can sort of agree and here are the ones where we
11 disagree and we think that this might be of help to you
12 in coming to grips with the question.

13 I think there is a general willingness to
14 do that and I believe it might well be helpful.

15 THE CHAIRMAN: Mr. Watson, I realize this
16 inconveniences you and your clients, and I hope you
17 will -- I just -- to what extent does that create a
18 problem? Perhaps I should have some handle on that.

19 MR. WATSON: My cross-examination is
20 scheduled for about two days. I had hoped to do it in
21 a little under two days.

22 This is an important issue, you are right
23 about that. What we are talking about is in effect
24 bringing my consultant back from Seattle, if in fact we
25 don't finish this week.

1 So we are talking about the plane fare
2 back and forth, so in light of that I --

3 THE CHAIRMAN: If that's the balance, I
4 think I don't have much trouble. I think I would
5 rather keep going with the hydraulic issue,
6 notwithstanding having to come back from Seattle.

7 I should in advance say that tomorrow
8 afternoon, because of other things, we have to stop no
9 later than four o'clock, so we may have to rearrange
10 the day's schedule in order to meet your timing. We
11 are prepared to do that, starting early or shortening
12 the lunch break, and so on.

13 MR. WATSON: Thank you, Mr. Chairman. I
14 will talk to my consultant.

15 THE CHAIRMAN: Mr. Campbell?

16 SUBMISSIONS BY MR. B. CAMPBELL:

17 Mr. Chairman, I will try to be brief on
18 this matter, and, as is my wont, I would like to focus
19 first on a couple of areas where I think there is
20 substantial agreement.

21 I think the first area which I would like
22 to record where it seems to me there is substantial
23 agreement is that all parties seem to agree that
24 project-specific hydraulic hearings should not revisit
25 the tradeoff amongst different options; that is,

1 hydraulic versus demand management versus fossil
2 generation, that for the applications - most of which
3 are already filed for the site-specific hydraulics -
4 that that question would be settled here and would not
5 be revisited in the project hearing.

6 I think it is fair to say that there is
7 consensus on that issue.

8 There also seems to be general agreement.
9 I don't think it is quite as complete as my first
10 point, but I think there is general agreement that this
11 Panel needs to reach a conclusion as to an appropriate
12 number of megawatts of hydraulic capacity to include
13 for long-range planning purposes.

14 Again, I don't think a consensus is quite
15 as complete around that issue as the first one I
16 mentioned, but I believe it is there.

17 Now, I would add to that, to that second
18 point, that for planning purposes Ontario Hydro also
19 needs to add a time frame, and, in my submission,
20 anyone for planning purposes - anyone, including this
21 Panel, for planning purposes - needs to add a time
22 frame. That is, planning is not done on a time
23 independent basis; it is a real question in planning
24 whether you expect those megawatts to be available in
25 the period of 2000 to 2005, 2005 to 2010, whenever. To

1 have just a generalized number of megawatts with no
2 sense of the timing of those in our submission just is
3 not adequate for planning purposes.

4 Now, there has also been -- the second
5 area I would like to turn to is -- I am dealing
6 basically in three areas, just identifying briefly the
7 areas on which there is some agreement.

8 The second main area I will be dealing
9 with is the discussion around the consequences of the
10 hydraulic approvals that Ontario Hydro has requested.

11 The third area I will be dealing with is
12 an area of two specific concerns that have been raised
13 or two specific suggestions that have been raised in
14 the submissions to you.

15 As I say, my second point has to deal
16 generally with the submissions on the consequences of
17 the hydraulic approvals requested.

18 Now, Hydro has been quite explicit,
19 repeatedly saying that this is a planning hearing, and
20 I think from our perspective what that means is that it
21 is more than just a review of the options.

22 When one is doing planning one can never
23 say with certainty that any of the components of the
24 plan that is put forward will be implemented in future
25 exactly as anticipated in the plan, and we say that

1 applies to all options, not just this option. It
2 applies to this option as to all options.

3 So on the one hand, it is not simply an
4 academic review of options. On the other hand, it
5 isn't a fixed and rigid, inevitably unchangeable
6 timetable for certain specific activities. That's not
7 what planning is about either. Planning has to
8 accommodate the fact that to do that would be foolish
9 in the extreme because the future never unfolds exactly
10 as predicted.

11 Now, applying that general principle to
12 hydraulic facilities, Ontario Hydro does submit that
13 the approvals requested in this proceeding are quite
14 different in kind and nature from project approvals.

15 The planning approvals requested are
16 requested after focusing on criteria for screening down
17 the potential in the province, and having screened down
18 that potential also applying particular factors to that
19 remaining potential to determine the overall order in
20 the plan for developing that screened potential.

21 I want to be absolutely clear that Hydro
22 explicitly recognizes that it is entirely open to a
23 project hearing to reject a hydraulic project whether
24 or not the requirement and rationale has been approved
25 by this Board.

1 [10:15 a.m.]

2 To say that the approvals requested are
3 approvals at a planning level does not, in our
4 submission, require this Board to make a finding that
5 the projects are likely to be sited acceptably. We are
6 not asking this Board to rule on the approvability of
7 certain sites when they are examined in the course of
8 project applications.

9 In our submission, what the approvals
10 that have been requested require of this panel is that
11 you find that the criteria used for the screening were
12 adequate and were properly applied to screen out
13 certain areas, and you need to find that within the
14 remaining areas the factors applied in planning that
15 remaining potential were appropriate and were
16 reasonably applied in making judgments for long-term
17 planning purposes.

18 What we say is that part of that
19 judgment, part of that judgment is that there are some
20 good reasons to look at certain sites before others and
21 we say that these reasons are planning reasons based on
22 a planning rationale.

23 Obviously as a corollary to that, we
24 recognize that when looking at the detailed
25 environmental characteristics of a project, there are a

1 whole other set of site selection criteria or site
2 approval criteria and a whole other set of issues that
3 are necessarily outstanding after this Board's
4 approval, and that are entirely germane and
5 appropriately so to the question of whether the project
6 should proceed.

7 I want to deal with two specific points.
8 The first one is this question of whether it's sensible
9 to suggest a megawatt figure only, independent of any
10 geography.

11 Ontario Hydro's argument to you is that
12 in conducting the planning exercise it is for practical
13 purposes unable to arrive at a megawatt figure if it
14 doesn't consider the potential developments at some
15 level. Let me give you an example. Of the nearly
16 2,000 megawatts that are in the hydraulic approvals
17 requested, over 1,500 megawatts is redevelopments. The
18 planning strategy applied is enunciated clearly and it
19 favours upgrading existing generation, and in our
20 submission, that principle cannot be applied in the
21 abstract. It just can't be applied to megawatts. It
22 just doesn't make sense, the stations are there. It's
23 only the stations that are there that can be
24 redeveloped. There is an example of a kind of a
25 criteria that's been applied.

1 There also have been factors applied in
2 consideration of the timing and order of the potential
3 once the screening exercise has sort of identified that
4 potential. There is a series of factors that have been
5 applied, and some of those considerations relate to
6 matters like construction, continuity, the fact that
7 you can't build all of the developments all at once.
8 It's not an undifferentiated mass.

9 Again, at a planning level this factor
10 affects the timing of the megawatts, and again, it's
11 not just an abstract consideration. To make sense it
12 has to be applied to real world geography. It's an
13 important planning consideration.

14 Now, I use those examples to illustrate
15 planning considerations. And Hydro recognizes, has
16 been explicit about the fact that those kinds of
17 considerations do not address the particular
18 environmental characteristics, the very particular
19 environmental characteristics of the sites or the very
20 particular environmental characteristics associated
21 with alternative methods of developing those sites.
22 That's why we say that the project applications will
23 fully review and consider the specific environmental
24 issues associated with each site, and that if the panel
25 hearing that case is not satisfied on those issues,

1 that panel is entirely free to reject the site.

2 We say that to suggest that the findings
3 requested of this Board commit a project panel to a
4 project approval is, in our submission, simply wrong.

5 Accordingly, we say that some of the
6 submissions that have been made to you such as that by
7 the CEG is just wrong, when those submissions say that
8 the next hearing is just about mitigation. With
9 respect, that hearing will not just be about
10 mitigation. It will fully consider environmental
11 consequences of development and will be free to turn
12 down an application if it is not satisfied in that
13 regard.

14 I agree with Mr. Kelsey's view that there
15 should not be a gap, but we can't get to megawatts
16 without going through a screening process and applying
17 factors to say, here's how what is screened could
18 possibly be developed.

19 Our point is that we think we can do that
20 fairly at a planning level and reach sensible
21 conclusions, and having done that, we believe that
22 should be then the starting point for the next
23 discussion.

24 There will be in the evidence some
25 overlap. It's impossible. River flows, there is water

1 there, there isn't, and the in next hearing there is
2 water there, there isn't and it exists in certainty
3 quantities and flows.

4 For our purposes in this hearing, it
5 affords a certain potential. In that hearing, water
6 flows will have to be considered when alternative
7 methods of developing that potential to more or less
8 megawatts is considered.

9 So, there is going to be some overlap in
10 the evidence. But in our submission, we agree that
11 there should not be a gap; that is, a set of issues
12 that are just left hanging, but in our submission, the
13 proposal you have before you does not contemplate such
14 a gap and it is not suggested that there be such a gap.

15 Now, the second matter, the second
16 specific point I want to deal with is the suggestion
17 that this Board should only determine criteria but that
18 the application of the criteria, as I understand it, be
19 left to a subsequent application.

20 Now, it seems in our submission that this
21 submission is premised on criteria not having been set
22 out yet. But whether or not it's premised on that, we
23 submit that the submission ignores the fact that
24 criteria have been developed; they are explicitly
25 stated in the material, they reflect the experience of

1 conducting the option study. And, in our submission,
2 the suggestion that this panel simply establish
3 criteria ignores the fact that the plan review cannot
4 be completed if it doesn't consider whether these
5 criteria have been sensibly applied, whether the
6 criteria have been sensibly applied for planning
7 purposes and an appropriate amount and timing of
8 hydraulic resource has been included for planning
9 purposes.

10 [10:26 a.m.]

11 We don't do this, we don't do that. In
12 our submission you simply don't have enough information
13 in front of this panel for planning purposes. And I
14 would emphasize again, that we say that planning
15 criteria are quite different from site evaluation
16 criteria, and I wasn't quite sure when Mr. Moran made
17 his submissions, whether he was speaking of criteria
18 with the kind of screening criteria that I speak of, of
19 reducing the potential to an appropriate amount to look
20 at in more detail for planning purposes, or whether the
21 criteria referred to were site evaluation criteria
22 appropriate for project review.

23 Now, I think I've tried to explain our
24 difficulties with, if the criteria being spoken of are
25 the screening criteria to reduce the potential down, I

1 have made the points I've -- I have spoken to the
2 points I want to on that one. It has to do with
3 arriving at a sensible amount for planning purposes.

4 But if the criteria being spoken of are
5 or the suggestion is that what this Panel should do is
6 develop site evaluation criteria appropriate for
7 project review then, in our submission, that would be
8 inappropriate, and really I for a couple of reasons.

9 First, if the hope is that this would
10 save time in this hearing, it would be my submission
11 that that is a false hope indeed. Detailed site
12 evaluation criteria are part of and at the heart of
13 project environmental assessments. They are developed
14 with, in Hydro's planning process with public
15 involvement in discussing those criteria, and Hydro
16 believes they should involve appropriate local public
17 input which, in our submission, can't really be done in
18 this hearing and can be just as time consuming and it
19 would be just as time consuming at the end of the day
20 to argue about these as it would be to argue about the
21 individual sites because detailed site selection
22 criteria are tailored to a site application. And I
23 don't see how they can be ripped apart and talked about
24 in the abstract for site evaluation purposes. That
25 would take you not only down the road of looking at the

1 sites but further down the road in terms of looking at
2 the site evaluation criteria that are appropriate for
3 that site.

4 So, in our submission to embark down that
5 road and suggest that to do so would mean time saving
6 is quite a false hope and that, in our submission,
7 quite the opposite would result. We just don't it's
8 appropriate to do that in this hearing, not simply for
9 time reasons, but because the, that is something that
10 normally involves considerable discussions with the
11 more local community affected than, and those people
12 may or may not be here in all cases.

13 Secondly, I think it's fair to point out
14 that previous Boards have really shied away from doing
15 this in a staged hearing.

16 Now to turn to environmental assessments
17 that has been considered by Joint Boards, and under the
18 Consolidated Hearings Act when a Joint Board is
19 established, they have an authority under that
20 legislation to defer a part of a matter, and certainly
21 on previous Hydro applications they have been done in
22 two stages where broad screening down considerations
23 have been dealt with at what was called the "planned
24 stage" in transmission applications, and then the
25 detailed routes, once the basic shape was decided the

1 detailed routes were settled and came back to a hearing
2 in a route stage. I can advise the Board that Hydro
3 thought at one time that it might be sensible in the
4 plan stage to set out the processing criteria and have
5 it approved as to how to make the second stage
6 judgment. I can tell you that that suggestion that we
7 could obtain such an approval from the plan stage
8 hearing in eastern Ontario transmission, for instance,
9 was summarily rejected by the Board, and it would not
10 embark on that discussion for the same - as I recall it
11 in any event - for the same kind of reasons that I have
12 spoken of, that they have to respond to the particular
13 study that is then being conducted. And it was felt by
14 that Board, and it made an explicit ruling that it
15 could not deal with that request.

16 Now with all of that said - I guess
17 there's two all of that said - all of that said, if the
18 suggestion about criteria is that the criteria being
19 spoken of is the actual site evaluation criteria to be
20 applied in a project hearing, in Ontario Hydro's
21 submission that is an inappropriate exercise for this
22 panel to embark on. If the criteria being spoken of
23 are the planing criteria to get down to what should be
24 included in the plan, then you have those before you,
25 and the planning can only be done if they are applied

1 in this hearing, otherwise you have no sensible way to
2 arrive at an appropriate amount to include in planning
3 for hydraulic.

4 Now, a second to all that said is that
5 our position is really, at it's essence, quite simple.
6 This is a planning hearing. It's not an academic
7 discussion of options, and Ontario Hydro is entitled to
8 ask for planning approvals, and something that doesn't
9 involve some estimate of megawatts and some estimate of
10 timing just isn't planning. It may be interesting but
11 it's not planning.

12 THE CHAIRMAN: Well, I think I follow
13 that, but necessarily in assessing planning both from
14 timing and megawatt potential which is what you want us
15 to assess, you arrive at certain specified localities,
16 and you ask for the approval of those, the installation
17 of those localities granted subject to site specific
18 hearing and the possibility that those sites will not
19 be accepted at that hearing. What do you say then
20 about the position of several of the intervenors that
21 in order to make that assessment there has to be
22 consideration of evidence of alternative sites that
23 were not included, might have been included and that in
24 no time at all the process will be, will become whether
25 one likes it or not, very much a site specific type of

1 hearing in order to reach those conclusions of
2 assessing your planning considerations about the amount
3 of potential megawatts of hydraulic available and the
4 timing of bringing those on stream?

5 MR. B. CAMPBELL: I guess our submission
6 on that is that, yes, we do have to go through a
7 screening process which considers the potential
8 province-wide and bring it down to what we think is
9 reasonable for planning purposes, and that necessarily
10 involves trade-offs between different areas in the
11 province because that's where the potential is located.
12 We think that, that our position will be that that does
13 not require a detailed site by site look. There are
14 criteria...

15 MR. CHAIRMAN: That's easy to say but why
16 do you say that?

17 MR. B. CAMPBELL: Well I'm just going to
18 tell you.

19 MR. CHAIRMAN: All right.

20 MR. B. CAMPBELL: Because there are large
21 amounts of that potential that exist almost as river
22 basins to which there are practical and environmental
23 constraints that lead Ontario Hydro to the conclusion
24 that it's not reasonable to include that for planning
25 considerations, and that those constraints do not

1 require a detailed understanding of the effect on
2 paraleptiphlebia in the river at such and such a site
3 if a dam was constructed there. They are much more
4 general than that. It has to do with the nature of the
5 geography in the river basin. It has to do with the
6 distance from the grid. It has to do with aboriginal
7 concerns, and that there are a series of criteria that
8 on certain cases you can just look at that river basin
9 and say if these are your criteria then this for the
10 following reasons looking at these criteria we believe
11 that potential should not be included in Hydro's long
12 range planning.

13 [10:38 a.m.]

14 There are large amounts of capacity that
15 can be dealt with on that basis.

16 Having gone through that and got down to
17 a smaller set of potential, we then say, all right, we
18 have done this sort of course, this screening, and it
19 is just as Mr. Estrin described the other day. We look
20 at what's there, and we say, now, is this just an
21 undifferentiated mass? No, there are certain
22 principles that should be applied if it is going to be
23 considered as a project - not if it is going to be
24 approved in the end of the day; if it is going to be
25 considered as a project, there are certain factors that

1 need to be applied.

2 We've enunciated those, and we apply
3 those, and that requires some knowledge about the
4 characteristics of the site, but again, it does not
5 require that you mesh the paraleptiphlebia in the
6 river, depending on this dam or that dam and see what
7 is going to happen. These are characteristics that one
8 can -- factors that one can look at and say, this is or
9 is not a sensible matter to consider, either from an
10 environmental, economic or technical point of view,
11 when deciding amongst this reduced mass of potential
12 whether there is a sensible way to approach it.

13 We say there is a sensible way to
14 approach this. We have got it down to "Here's the kind
15 of potential that we think is reasonable to consider",
16 and then we say, "And we think there is a sensible way
17 to approach it", and it that necessarily involves
18 looking at those factors again and saying, "Okay,
19 here's this much reduced amount of potential. What's
20 the sensible way to approach that potential?"

21 And that's what Hydro has done. It says,
22 "Here is a potential way. Here is what we think is a
23 sensible way to approach this potential."

24 Take my redevelopment example. We think
25 it is sense to do the redevelopments first, and that

1 will be discussed in the evidence.

2 THE CHAIRMAN: But it will be discussed
3 in the evidence in the context of other alternatives,
4 other possible sites, other timing considerations, and
5 doesn't that inevitably lead to an extensive discussion
6 of each particular -- granted, you can screen it down
7 to what you have identified - I am not saying you can -
8 but what you have identified in the plan as the
9 "defined" and "conceptual" areas.

10 But even so, aren't people who are
11 interested in any of those particular areas want to
12 assess them in comparison with other areas within that
13 group, and isn't that going to lead to inevitably to
14 quite extensive evidence about that?

15 MR. B. CAMPBELL: In our submission, the
16 evidence that this is -- this is not a case where you
17 have... I think I would agree with you if we were
18 asking for a larger approval than we are asking for.

19 All we are saying is we would like those
20 factors looked at that we considered; we would like
21 people to turn their minds to whether they are a
22 sensible approach to setting out an approach to
23 considering the development of this potential; and, in
24 our submission, when one looks at those factors and
25 applies a modicum of common sense, this does not

1 require extensive information, extensive discussion on
2 each and every site.

3 The factors by their nature do not
4 require that. They are a guide that is used when one
5 is considering what is an appropriate approach to that
6 screened potential, and we understand that we will
7 stand and fall on whether those factors seem to this
8 Panel in the end to be sensible and whether they have
9 been sensibly applied, but our perception is that they
10 do not require extensive, detailed information on each
11 site in order for their fair application.

12 If you come to another conclusion on
13 that, and there are some sites perhaps later in the
14 plan - not necessarily in the approvals, although Nine
15 Mile might be an example - where if you decide that
16 really to make the kind of consideration that we need,
17 we are asking for, you need much more extensive
18 information, then, you know, we are not going to
19 pretend: We don't have it.

20 But we think that planning doesn't need
21 to be done on the basis of that very kind of detailed
22 project-specific information, which is appropriate for
23 project approval questions but is not necessary for
24 planning questions, and we will have to satisfy you on
25 that.

1 DR. CONNELL: Mr. Campbell, I think a
2 difficulty that I have in following your argument is
3 this.

4 Let me imagine that I am a party to the
5 hearing and that I find your planning criteria totally
6 satisfactory and I find that the way you have applied
7 them is unexceptionable.

8 There is only one problem, and that is
9 that one of the sites you have picked is exactly where
10 I like to camp every July 1st. Nothing could be more
11 site specific than that.

12 So what shall I do? Shall I simply say I
13 will take my site-specific concern away and wait until
14 the project proposal comes up and address it then? I
15 suppose if I were entirely rationale I would do that,
16 but I'm not, so I think again about your planning
17 criteria and I think is there a way that I can
18 represent my concern as a planning criteria?

19 For example, can I make the case that all
20 the best places to camp in Ontario are where there are
21 hydraulic heads, and can I then expect the Board to
22 hear my case, my evidence, about all the wonderful
23 camping places there are on the rivers of Ontario where
24 there are falls and rapids?

25 Perhaps a trivial example, but there are

1 probably a few hundred such site-specific issues which
2 could be elevated, at least in the minds of some
3 people, to the status of planning criteria.

4 I am just not clear how we can exclude
5 the possibility of at least beginning to hear those
6 kinds of evidence until we understand the nature of the
7 case and that this could become an extraordinarily
8 time-consuming proposition.

9 MR. B. CAMPBELL: I think in response to
10 that I would say that what in the end you are --
11 looking at the particular example and its nature, what
12 in the end you are talking about is: What are the
13 criteria?

14 And we are prepared. We are prepared to
15 set out: Here are the criteria that we think are
16 appropriate for planning purposes. And we think
17 that -- you know, without saying that this is our
18 evidence at all, let me just respond in the spirit of
19 your hypothetical.

20 There is a whole variety of potential
21 that is affected by park development in this province,
22 both the river parks, long parks that are associated
23 with stretches of river, there are large other parks
24 that have potential in them, and that respond to those
25 kinds of concerns that are associated with camping and

1 recreational use of a particular piece of nature.

2 Our criteria use that information, and in
3 the end it is certainly open to someone to try and
4 persuade you that the criteria are inadequate.

5 What I would say is that the level that
6 is appropriate for this Panel to look at is, all right,
7 taking into account that kind of concern for the broad
8 planning, the top-down planning decision in effect, of
9 the screening down to this smaller list, where we would
10 say that that criteria is appropriate.

11 And an Intervenor would be free to attack
12 that on the kind of grounds that you indicate, and at
13 some point the Board is going to have to make a
14 decision that an individual, very site-specific concern
15 of the type that you mentioned is or is not appropriate
16 for including in planning criteria.

17 You can't avoid that decision in any
18 event. There are going to be some questions like this
19 that arise. There is no magic wand that is going to
20 take the evidence and perfectly divide it that this
21 piece of evidence is only appropriate for a planning
22 consideration and this piece of evidence is only
23 appropriate for a site consideration. There are going
24 to be arguments about that.

25 But I think what we have tried to do and

1 what we will try to do in Panel 6 is present to you a
2 sensible way of coming down to a developable potential
3 and how one approaches the approach to the
4 consideration of that potential. And that is all we
5 seek.

6 I think if you keep your mind -- everyone
7 keeps their mind on exactly the fact that that is all
8 that we seek, that yes, there will be some questions
9 like this that need to be sorted out, but they are
10 capable of being sorted out.

11 DR. CONNELL: Then let us suppose that at
12 subsequent stages, after Panel 6, that the parties
13 introduce evidence in argument which is persuasive to
14 the Board that in addition to the criteria that Hydro
15 has used some, perhaps three others, can be clearly
16 defined and set out as appropriate. Then, what
17 happens?

18 Do we then do a kind of a rerun of Panel
19 6 in which Hydro's position on those three criteria is
20 put forward? If it should be found that the case is
21 incomplete by one of those criteria, does the entire
22 case fall on that point?

23 MR. B. CAMPBELL: Well, I mean, the case
24 would evolve in the way a case normally does.

25 If there is a particular alternative

1 brought forward for your consideration and presented in
2 someone else's case when they are calling their case
3 you would have that evidence as to why, the rationale
4 for why in that party's view that is an appropriate
5 planning criteria.

6 Then, should Hydro choose to exercise its
7 right, Hydro would then have the right of coming back
8 and saying, well, for that specific suggestion -- not
9 redo its whole case, but for that specific suggestion
10 we agree or disagree, and here are the consequences of
11 that.

12 It may be that it so enlarged the group
13 that should be considered within the five years that
14 you add a term and condition that deals with that, or
15 it may be that it eliminates something that was within
16 that five year period that the approvals are tied to,
17 and you would add a term and condition that deals with
18 that. That is all open to you.

19 But where we see the debate focusing is
20 on what is the appropriate planning criteria and its
21 application to the potential in the province.

22 But that is the normal way a case would
23 evolve. We would come back in reply and deal with that
24 narrow issue, and then you would have a complete record
25 of views on it and you would have to make up your mind

1 as to whether you believed that that criteria was
2 important.

3 If you did, you would have evidence on
4 the consequences of that, and you would have to apply
5 an appropriate term and condition to reflect your
6 judgment with respect to both the criteria and its
7 consequences.

8 [10:50 a.m.]

9 MS. PATTERSON: On another topic, could
10 you go back and discuss the eastern Ontario
11 transmission line hearing? I wasn't sure what point
12 you were making about the ruling in that case.

13 MR. B. CAMPBELL: The point I was simply
14 making was that as originally constituted, the
15 application contemplated two stages of approval, if you
16 like. The plan stage was for a system configuration;
17 that is, I am going to get the lines wrong but it
18 doesn't matter for these purposes, should there be a
19 line that goes from Lennox along to Cornwall and a line
20 from Cornwall to Ottawa, or should there be a system
21 configuration go from Lennox to Ottawa and Ottawa to
22 Cornwall, or should it go in all three areas, let's
23 just say. There were a variety of system
24 configurations that were evaluated and broad corridors
25 developed as usual for linear facility planning. And

1 the decision requested at the plan stage with the
2 deferral to the later panel, to the later hearing,
3 which was to be conducted by the same panel, the
4 decision originally requested was that there be an
5 approval, in effect, of the plan, which of the
6 alternative system plans made sense, it was
7 contemplated that Ontario Hydro would then go away, do
8 more detailed studies for those particular legs
9 associated with that particular plan, and part of the
10 approval originally requested at the plan stage had to
11 do with the process of conducting those studies and
12 reaching that conclusion. In effect saying, would you
13 give us approval so that if we do it this way, you will
14 be satisfied that the right things have been addressed
15 and we don't need to argue about that later.

16 In that case, the Board made it clear
17 that it was not prepared to grant that approval. It
18 felt it was inappropriate for it to enter into an
19 inquiry and make a decision on the nature and extent,
20 scope, et cetera, of the studies to be conducted and
21 the public involvement in the course of what were
22 called I think the route stage studies. And basically,
23 simply said, we are not prepared to do that.

24 Now, the circumstances are slightly
25 different, and in fact, I think they mitigate more to

1 the side of not doing it here. The circumstances of
2 course were it's a Joint Board, the same panel was
3 going to hear both cases because the deferral of the
4 route stage issues were the panel, in effect, made an
5 order deferring it to itself. So that even in that
6 circumstance where it was clear that there was going to
7 be the same panel hearing right through on the route
8 stage approval, they had to be satisfied on the route
9 stage issues as well as the plan issues. Even in that
10 case they said we don't want to get involved in making
11 an order on how to do the route stage studies.

12 MS. PATTERSON: So, your argument here is
13 that we should be setting out screening criteria for
14 approving your screening criteria then, but not getting
15 into the site-specific criteria?

16 MR. B. CAMPBELL: The site approval
17 criteria.

18 We say there is a difference. There is a
19 different rationale associated with planning
20 considerations. It's not the same rationale when you
21 are dealing with site-specific approvals. That's a
22 question of a different nature.

23 If the ability to have a plan approved as
24 contemplated by the Act means anything, then there is a
25 set of criteria and rationale associated with a plan

1 and that is a different thing, a different set of
2 things than is necessarily involved with site approval
3 criteria. In our submission, this Panel should not
4 venture into trying to define and make an order with
5 respect to site approval criteria. That will take you,
6 in our submission, right into an examination of site
7 characteristics because the site approval criteria are
8 necessarily associated with those site characteristics,
9 particularly in the case of hydraulic where there can
10 be quite different site characteristics, just because
11 that's the geography.

12 In the end we are driven back always to
13 that question. Hydraulic doesn't exist in an abstract
14 way in the way some of the other options do. It only
15 exists where it exists and we don't see how you can
16 sensibly avoid that question entirely.

17 Thank you, Mr. Chairman. Unless there
18 are any additional questions, those are my submissions.

19 THE CHAIRMAN: All right. As we
20 previously discussed -- Mr. Moran, are you rising?

21 MR. MORAN: I was wondering if I could
22 make a few brief points in reply to some of the points
23 that Mr. Campbell has made.

24 THE CHAIRMAN: Well, I don't know if I
25 want to open that up at this time. I won't foreclose

1 it, but I think we will take the adjournment now.

2 MR. MORAN: That is fine.

3 THE CHAIRMAN: And then perhaps we can
4 see how we go from there.

5 Should we just realistically say this
6 afternoon, or what do you think?

7 Perhaps you could let us know in an hour
8 how you are getting along.

9 MR. B. CAMPBELL: I wondered if it might
10 not be simpler just to say why don't we come back at
11 two. We can come back a little earlier this afternoon.
12 I think if we do get some agreement write right it up
13 and so on then...

14 THE CHAIRMAN: Because I gather you want
15 to have a look at what Mr. Shepherd has put in.

16 MR. B. CAMPBELL: Yes. I confess that he
17 was kind enough to give it to me at a quarter after
18 nine but I did have a few other matters that I had to
19 fuss about and haven't been through it in any detail
20 whatsoever.

21 THE CHAIRMAN: Is there any party who
22 made a submission on Friday who is not represented
23 today? I did an eye check and it looked as if
24 everybody was here.

25 MS. MARLATT: Maryka Omatsu isn't here.

1 I don't see her.

2 THE CHAIRMAN: No, she isn't, you're
3 right. Is she the only one?

4 I think perhaps she is the only one.
5 Perhaps if someone could contact her just to let her
6 know that this is happening.

7 You will let us know, Mr. Campbell, in
8 about an hour how you are doing.

9 MR. B. CAMPBELL: All right.

10 THE REGISTRAR: This hearing will recess
11 until recalled.

12 ---Recess at 11:02 a.m.

13 ---On resuming at 2:12 p.m.

14 THE REGISTRAR: Please come to order.
15 This hearing is now in session. Please be seated.

16 THE CHAIRMAN: Mr. Campbell?

17 MR. B. CAMPBELL: Thank you, Mr.
18 Chairman.

19 There are a couple of brief matters. One
20 is to report to you generally what is happening as a
21 result of the discussions over the break.

22 There was a long discussion of the nature
23 of the approvals and possible changes to the
24 formulation of the approvals. The Board has heard lots
25 of argument about that issue generally, and there was

1 some discussion of the change to the formulation of
2 that, as well as an exercise of going through Mr.
3 Shepherd's questions as to whether the categorizations
4 were correct based on the approvals in their state as
5 is. That document is being revised to reflect those
6 discussions.

7 I think Mr. Shepherd is kindly going to
8 provide some copies of that later this afternoon.

9 With respect to the general question of
10 the nature of the approvals, I think it is fair to say
11 that that position has been strenuously discussed.

12 One concern, of course, that Ontario
13 Hydro needs an answer to in order to assess even, or
14 obtain any sensible advice on the suggestions that the
15 nature of the approvals should be modified, is what
16 happens to the existing three applications that are
17 already filed. As the Board will recall, Little
18 Jackfish has been under review for some number of
19 years, and Niagara and Mattagami have also been under
20 review, I think it is more than a year in one case,
21 just under a year in the other case.

22 Mr. Moran has undertaken to go away and
23 get instructions as to when and what steps could be
24 taken with respect to those applications if obviously
25 the kind of questions that are of interest to Ontario

1 Hydro are, if a body of evidence was going to be
2 reviewed there, is it the government position that we
3 can just, in effect, lift that body of evidence here
4 and put it in there, into each of the three
5 applications and then have the reviews of those
6 applications issued. Questions of timing of all of
7 that, are very material to any consideration by Hydro
8 of a change to the nature of the approvals.

9 So, Mr. Moran has undertaken to go away
10 and get instructions on that matter. Obviously that's
11 not something that can happen overnight and we will
12 keep you posted on that.

13 Obviously, once that is settled on the
14 government side, then Hydro will have to consider
15 whatever the results of the government position is with
16 respect to those three applications.

17 We will take every step, every attempt
18 that we can at that time to come to some timely
19 consideration of whatever suggestion the government is
20 prepared to put forward in that regard.

21 So, that is sort of the status of matters
22 as best I am able to describe it, which is probably
23 inadequately in the circumstances, but I think it
24 captures the essence of it.

25 Now, the second matter I wanted to deal

1 with was that I reserved an exhibit number last
2 Thursday. When I went through Mr. Kelsey's submissions
3 I realized that undoubtedly we had caused some
4 confusion. At the last paragraph of the hydraulic
5 chapter in Exhibit 3, it refers to approval of the
6 plan, and of course it should have been approval of the
7 program. Here I am being trying to be so concerned
8 about the terminology and the document itself has an
9 error in it in that regard.

10 I had a bunch of copies which I cleverly
11 displaced this morning in going back and forth, but we
12 will be distributing to all parties a correction to
13 that last paragraph, and that would be Exhibit 336,
14 which as I said, I talked to Board staff previously and
15 had that number held.

16 But as I say, I have spoken about it at
17 the meeting today and I will make sure that every party
18 gets a copy.

19 ---EXHIBIT NO. 336: Errata; Exhibit 3; Page 12-15.

20 MR. B. CAMPBELL: The third matter I
21 wanted to deal with before we get started relates to
22 this panel. The Board will be aware that Ontario
23 Hydro - Mr. Vyrostko has spoken of it several times -
24 is having to come to some conclusion as to the
25 guideline that it will use for deciding what

1 constitutes a preferred cogeneration non-utility
2 generation project, and that it was his intention to
3 come to a conclusion on that matter in time to inform
4 the industry or the proponents, rather, who have
5 projects before Hydro for consideration. He wanted to
6 inform those proponents this Friday.

7 I am advised that the guidelines have now
8 largely been settled, and the meeting for Friday has
9 been previously arranged. In the expectation that it
10 would be settled, I am advised that they were largely
11 settled yesterday with sufficient executive approvals,
12 as I understand it.

13 I have spoken to counsel for MEA on the
14 matter and have asked his indulgence that this matter
15 not be dealt with in the balance of this week. Ontario
16 Hydro has taken, I think quite correctly, the view that
17 it would prefer to communicate this guideline to the
18 project proponents directly in the meeting that is
19 scheduled on Friday rather than have them learn it in
20 whole or in part through discussion at this hearing.

21 Given that the MEA cross-examination is
22 extending into next week in any event, I have
23 undertaken to Mr. Watson --

24 [2:18 p.m.]

25 MR. CHAIRMAN: Is that right, Mr. Watson?

1 MR. WATSON: That's my...

2 MR. CHAIRMAN: Even if we give you some
3 time additions here, it is still going to go into next
4 week in any event?

5 MR. WATSON: I was anticipating about two
6 days.

7 MR. CHAIRMAN: Sorry, Mr. Campbell, go
8 ahead.

9 MR. B. CAMPBELL: And under the
10 circumstances I thought it appropriate that I simply
11 record on the record that the guideline has been
12 settled. It is going to be communicated to proponents
13 on Friday. We can make it available to Mr. Watson on
14 Friday, and we'll circulate it to people interested in
15 this panel as well, and given that Mr. Watson is
16 agreeable, I would like to ask the Board that we be
17 permitted to proceed on that basis.

18 THE CHAIRMAN: All right, that's
19 satisfactory, I take it, Mr. Watson?

20 MR. WATSON: I have no objection to that
21 Mr. Chairman on the understanding that if by some
22 chance we finish before Friday, I would like an
23 opportunity to review what Mr. Campbell produces and
24 come back at the end of the break.

25 THE CHAIRMAN: But I think it goes

1 farther. Mr. Campbell does not want you to get into
2 these kind of issues with this particular panel at this
3 time.

4 MR. WATSON: I have no difficulty with
5 that, and as I said, if I do end this week I will come
6 back and deal with those later.

7 THE CHAIRMAN: All right. I think that
8 we are grateful to the parties and the efforts they are
9 making to try and resolve this very difficult issue of
10 the scope and extent of the hydraulic panel. We
11 recognize that there comes a point when discussions of
12 this nature cease to be productive and that we are
13 charged with the responsibility of giving some
14 direction at that point to the participants.

15 I just would like to ask you, Mr.
16 Campbell, how you see the future. As you know, after
17 tomorrow we will not be sitting again until a week
18 Monday, and I just, and the estimation of this, the
19 remainder of the cross-examination of this panel will,
20 perhaps, at the most be two weeks, maybe less than
21 that, so I just would like to get in that context how
22 you see this hearing developing.

23 MR. B. CAMPBELL: Could I have just a
24 moment?

25 THE CHAIRMAN: Yes.

1 ---Off the record.

2 MR. B. CAMPBELL: Mr. Chairman, my
3 perception is - and it is no more than that - that
4 there really are at the end of the day only going to be
5 two things. Either the Board is going to have to deal
6 with this on the basis of the arguments that have been
7 presented, and the status of things virtually as it is
8 now perhaps with the additional guidance that the list
9 of questions may provide you in terms of looking at a
10 range of questions and sort of seeing, illustrating
11 where the differences are and, I think, the list of
12 questions will be some help to you in that regard.

13 It is either going to be dealt with
14 virtually as you have it now, or my sense of the
15 discussion is the only thing that is likely to make it
16 materially different at least for some intervenors is
17 if there is, in fact, a change in the nature of the
18 approvals. That depends on Ontario Hydro's assessment
19 and the steps the Government can take with respect to
20 the applications that are before it now, and have be
21 for some time. I can't tell you what the result of
22 that is because I am in no position even to give
23 advice, never mind to receive instructions, but I think
24 I can say that both Mr. Moran and I will do our utmost
25 to bring back to you a clear answer to that by a week

1 Monday, which is the first day that we're back after
2 the break.

3 THE CHAIRMAN: If it is possible to do
4 that earlier you will even though the panel is not
5 sitting. That is if you could communicate anything of
6 that nature I think that would be helpful.

7 MR. B. CAMPBELL: Yes, we are trying to
8 give you what in our judgment if we both go back and
9 beat up our clients respectively and focus on this
10 matter, can we get an answer?

11 We think it might be possible to get you
12 that, but obviously if it's earlier there's absolutely
13 no reason we would delay either one of us, and we would
14 communicate with you as soon as we possibly could.

15 So that said, as I understand it from Ms.
16 Morrison that would take us then to the week of -- is
17 that the 28th?

18 THE CHAIRMAN: The 28th, yes.

19 MR. B. CAMPBELL: And Ms. Morrison
20 anticipates, as I understand her reading of the
21 schedule, that it is possible that this panel could
22 finish by the end of that week?

23 MS. MORRISON: It's possible but
24 unlikely...

25 MR. B. CAMPBELL: Oh.

1 MS. MORRISON: The end of that week or
2 part way through the next week.

3 THE CHAIRMAN: I think that is what I
4 had. At the most two weeks.

5 MS. MORRISON: Two weeks.

6 THE CHAIRMAN: That is eight sitting
7 days.

8 MR. B. CAMPBELL: N if then Mr. Moran and
9 I are able to report back on the Monday - let me just
10 try and do this a little bit in my head - it seems to
11 me that then there would need to be a communication
12 between the parties, and if that could be done quickly,
13 that statements of concern could then be filed at the
14 beginning of the last week of this panel's appearance
15 and, perhaps, scoping held at the beginning of next
16 week and virtually go right into the start of the
17 panel. I think our evidence in-chief might be affected
18 somewhat by this, but I think we can anticipate that a
19 little bit. I don't think that's an insurmountable
20 problem for us.

21 So, if that kind of schedule worked, then
22 I think that that might be sensible. I think that's
23 really all the guidance I can give.

24 As I say, it is just my perception that I
25 don't think the problem, as it's been enunciated to

1 you, is ever going to go away entirely, and I won't
2 into why.

3 THE CHAIRMAN: All right.

4 MR. B. CAMPBELL: But I think the one
5 thing that may ease the pressure on it is this question
6 of changing the nature of the approvals, but that is a
7 question that I will tell you Ontario Hydro is not
8 willing to embark upon lightly. It is a very serious
9 matter and it does require a little bit of time for
10 thought.

11 MR. CHAIRMAN: Thank you.

12 I don't encourage this, but if there is
13 any party who wants to say anything about the hydraulic
14 process at this stage recognizing that there will be
15 opportunities in the future, they are now free to do
16 so.

17 All right, Mr. Watson, it is now 2:30.
18 We can sit with you until about quarter past 5:00. We
19 are prepared to start tomorrow at 9:15 and maybe take a
20 shorter than usual lunch hour, but we must finish by
21 tomorrow afternoon.

22 MR. WATSON: That's fine, Mr. Chairman.

23 THE CHAIRMAN: And we recognize that you
24 may not finish but we will give you a chance anyway.

25 MR. WATSON: I appreciate the chance. I

1 will see if I can make the most of it.

2 MR. B. CAMPBELL: Mr. Chairman, just
3 before Mr. Watson continues. There's a sign on the
4 back that says "No food or drink in the hearing room."
5 Could I have a dispensation to have my glass of orange
6 juice for lunch because in dealing with all of this I
7 haven't had the opportunity...

8 THE CHAIRMAN: This is a compassionate
9 request, is it?

10 MR. B. CAMPBELL: It is a compassionate
11 leave is requested. Definitely.

12 THE CHAIRMAN: Yes.

13 MR. B. CAMPBELL: Thank you.

14 MR. WATSON: Mr. Chairman, members of the
15 panel, with me I have Gail Tabone. She's one of the
16 MEAs consultants. She is a specialist in utility
17 analysis.

18 I also have with me Deborah Reed who is
19 the MEA's hearing officer.

20 I've given Mr. Lucas, a document which I
21 would like to be the next exhibit, please?

22 THE REGISTRAR: That will be No. 340, Mr.
23 Chairman.

24 ---EXHIBIT NO. 340: NUG Reference Material to
25 be used in MEA Panel 5 Cross-Examination.

1 THE CHAIRMAN: Does the Panel have it?

2 MR. WATSON: Yes, Mr. Chairman. And
3 there are copies here for the intervenors. I believe
4 most of them have already helped themselves,
5 and you will notice that this is the same format as the
6 other MEA documents. Simply excerpts from various
7 documents which have already been filed and where
8 they have not been, that's to be noted, and will be
9 discussed.

10 [2:30 p.m.]

11 One last thing before we start, Mr.
12 Chairman. You said we would go to a quarter after
13 five. Does that assume you want to take a break, say,
14 at a quarter to four?

15 THE CHAIRMAN: Something like that.

16 MR. B. CAMPBELL: Mr. Chairman, on the
17 exhibit number -- I'm sorry, I phoned about Exhibit
18 336, but I have no idea what 337, -8 and -9 are.

19 THE REGISTRAR: Mr. Chairman, they have
20 been prefiled this morning.

21 MR. B. CAMPBELL: Oh.

22 THE CHAIRMAN: Why don't you read them in
23 then, if you have got them.

24 THE REGISTRAR: I don't know what they
25 are.

1 THE CHAIRMAN: All right. I will read
2 them in tomorrow. Who prefiled them?

3 THE REGISTRAR: Chris Martin?

4 MS. MORRISON: Those are exhibits from
5 our trip north, which are being put on the record and
6 will be read in tomorrow.

7 THE CHAIRMAN: All right. They're just
8 about the Moosonee trip.

9 KEITH DOUGLAS BROWN,
10 PAUL FRANK VYROSTKO,
JOHN KENNETH SNELSON; Resumed.

11 CROSS-EXAMINATION BY MR. WATSON:

12 Q. Panel, I would like to deal first of
13 all with cogeneration potential at potential sites.

14 My understanding is that in the 1990 NUG
15 plan all cogeneration sites are assumed to be developed
16 as combined cycle; is that correct?

17 MR. BROWN: A. That is correct.

18 Q. And is it not possible that some of
19 the sites would be something other than combined cycle,
20 such as steam turbine or gas turbine?

21 A. Yes, that's also possible, or
22 reciprocating engine.

23 Q. Have you made the combined-cycle
24 assumption for the 1991 NUG plan?

25 A. Preliminary analysis has indicated we

1 are moving in the same direction as the 1990 NUG plan.

2 Q. So that is, you would be assuming
3 that there would be combined-cycle development at all
4 the sites?

5 A. On average, the technical potential
6 based on combined cycle would continue to be used in
7 the plant.

8 Q. Panel, if you could look at page 1 of
9 Exhibit 340 that I have put before you?

10 Mr. Chairman, this is not a Hydro
11 document. However, what it is, is an attempt to
12 excerpt certain materials from Hydro documents or
13 documents prepared which Hydro would have.

14 And you will notice that we have referred
15 to a number of studies, starting with the 1986 "Ontario
16 Hydro Estimate of Cogeneration Potential" through to
17 the "1990 NUG Plan", and the bottom line is the 1991
18 "Ontario Hydro, Panel 5, Supplementary Witness
19 Statement"

20 Over on the far side we have the percent
21 development at a site, and, Mr. Brown, you were just
22 informing us that the 1990 NUG plan has 100 per cent,
23 has combined cycle, which is 100 per cent site
24 development; is that correct?

25 A. Just a slight correction in 1990.

1 It's more like 95 per cent. It is very close. In the
2 NUG plan we have the figure of 1,326 would be 100 per
3 cent, and the actual forecast as you have indicated
4 here is 1,250, so that's 95 per cent.

5 Q. But the assumption of combined cycle
6 is still correct?

7 A. That's correct.

8 Q. Okay. And it is true that
9 combined-cycle technology leads to a higher production
10 of electricity; is that correct?

11 A. Yes, it does.

12 Q. And that leads to a higher technical
13 potential?

14 A. Yes, that's true. That's one of the
15 reasons.

16 Q. If you turn to page 2 of Exhibit 340,
17 that is an excerpt from Interrogatory 5.9.54, page 3 of
18 that interrogatory answer.

19 THE CHAIRMAN: Has 5.9.54 got a number?

20 THE REGISTRAR: That will be 321.42.

21 MR. WATSON: Q. And --

22 MR. B. CAMPBELL: Just a minute. I'm
23 sorry, Mr. Chairman. 5.9.54, I think, is in as 321.7.

24 THE CHAIRMAN: 7?

25 MR. B. CAMPBELL: Yes, I think so.

1 THE CHAIRMAN: That's correct. So 42 is
2 open again.

3 Proceed, Mr. Watson.

4 THE REGISTRAR: 42 is open.

5 MR. WATSON: Q. Just by way of
6 background, Mr. Brown, the answer to Interrogatory
7 5.9.54 was a review of Ontario Hydro's 1989 NUG plan
8 conducted by external consultants; is that correct?

9 MR. BROWN: A. That's correct.

10 Q. And on page 3 at the top of the page,
11 the last sentence in the first paragraph, in effect
12 your consultants are telling you that not every NUG
13 developer will invest in combined cycle, and in effect
14 that it estimates only a fraction will do so?

15 That's my understanding of what the
16 consultant was reporting.

17 A. I think it might be better to --
18 these are the numbers I developed in the 1989 NUG plan.

19 The 35 per cent is based on a review of
20 projects that were on hand at the time, and of the ones
21 that were in - it was approximately 100 projects - the
22 potential proposed from proponents at the time
23 represented 35 per cent of the technical potential I
24 had estimated, and the consultant in his review said
25 that's a pretty good answer.

1 Q. Okay. Just so we don't get confused,
2 Mr. Brown, there are -- referring back to page 1, there
3 are two columns: one dealing with technology, the
4 other dealing with per cent development at site.

5 Let's try and deal just with the
6 technology if we could for a minute. We have been
7 talking about the fact that combined-cycle technology
8 yields a higher production of electricity and a higher
9 technical potential, and just dealing with the combined
10 cycle question, in effect the consultant is telling you
11 that not every NUG developer is going to invest in a
12 combined cycle. That's his review of the 1989 plan; is
13 that fair?

14 A. I don't know if I saw those words in
15 it.

16 Q. That's at the very top of page 3,
17 which is -- sorry, page 2 of Exhibit 340.

18 A. Yes.

19 Q. In addition, the utility recognizes
20 that not every NUG developer will invest
21 in a combined cycle...

22 And it estimates the fraction that it thinks will do
23 so?

24 A. That number is not just because of
25 combined cycle -- or not choosing combined cycle; he

1 could choose a combined cycle that only uses 50 per
2 cent of the potential. So it is difficult to say that
3 because they choose steam turbine or gas turbine -- the
4 35 per cent is a combined aggregate response to a lot
5 of factors affecting technical potential.

6 Q. Again, if we could just -- I quite
7 intend to get to the 35 per cent, which is the far
8 column, the "Potential Per Site", but just dealing with
9 the technology, in effect what the consultant is
10 telling you is that you realize that not every
11 utility -- sorry, not every NUG developer is going to
12 use combined cycle; isn't that fair?

13 A. Yes, that's true.

14 Q. In fact, is it not true that of the
15 37 or so cogeneration sites discussed in the 1990 NUG
16 plan only two of these sites are combined-cycle sites?

17 A. In the 1990 NUG plan, the plants that
18 were in-service at the time, I am only aware of one
19 that was combined cycle. There was one under
20 construction also combined cycle.

21 Q. In fairness to you, Mr. Brown, if you
22 look at pages 3 and 4 of Exhibit 340 that will show you
23 the Table 2-3 and 2-5 from the 1990 NUG plan, and, as I
24 understand it, all of those are other than combined
25 cycle, except for Dow Chemical, which in fairness is a

1 large one at 238 megawatts, and also a central Boise
2 Cascade plant which was not built and is not included
3 in this total?

4 A. In terms of combined cycle, in the
5 industrial cogeneration sector that is correct. There
6 is a combined cycle on the second page, but that is not
7 industrial cogeneration.

8 Q. And, in fact, the majority of the
9 sites listed here are steam turbines; isn't that
10 correct?

11 A. Yes, with the addition of some
12 reciprocating engine.

13 Q. And it is fair to say that if some of
14 the Leighton and Kidd sites were developed as steam
15 turbines rather than combined-cycle systems the
16 accompanying electric output would decrease?

17 A. Yes, that's true.

18 Q. We have an indication of that looking
19 at page 6 Exhibit 340, do we not? We have a -- sorry?

20 A. This is a rough indication of the
21 differences in the output of different technologies.

22 Q. Where we have steam turbines at
23 approximately 15 per cent of what a combined cycle
24 would produce?

25 A. That's correct.

1 Q. Now, have you performed any economic
2 analysis to determine the internal rate of return
3 associated with a steam turbine?

4 A. No, our analysis was on combined
5 cycle.

6 DR. CONNELL: Mr. Watson, are you going
7 back to Table 1 again?

8 MR. WATSON: Yes, I will be, Dr. Connell,
9 but if there is something you want to deal with now
10 that would be fine.

11 DR. CONNELL: I just wonder if one can
12 deduce the percentage figures from the numbers that
13 appear elsewhere in the table.

14 MR. WATSON: Perhaps Mr. Brown could help
15 you with that.

16 MR. BROWN: This is the far column?

17 DR. CONNELL: Yes.

18 MR. BROWN: And your concern?

19 DR. CONNELL: Well, if you take the '89
20 plan, the 35 per cent, how do I relate that percentage
21 figure to the numbers appearing in the earlier columns,
22 35 per cent of what?

23 MR. BROWN: This is the 35 per cent of a
24 number that's not shown on here.

25 When we did the 1989 NUG plan we

1 developed the cogeneration technical potential of 6,411
2 using combined-cycle technology. Our analysis at that
3 time with the gas forecast we used showed that we had
4 over 5,000 megawatts of economic potential of that
5 6,000, and we applied the 35 per cent to this 5,000
6 along with another number that is, I think, coming up
7 later, a 60 per cent penetration rate, which gives the
8 1,155.

9 So it is not obvious from here how we get
10 the 1,155 with the numbers presented. This is just a
11 snapshot of some of the numbers out of that plan.

12 MR. WATSON: That's correct, Dr. Connell.

13 We were simply trying to illustrate the
14 differences between the plan set, one being the
15 difference between the 1989 and the 1990 plan, the fact
16 that the assumption has changed to combined cycle, and,
17 again, the assumption on site development changes from
18 35 per cent to 100 per cent because of the change in
19 technology assumption.

20 DR. CONNELL: Thank you.

21 MR. WATSON: Q. Mr. Brown, we were
22 talking about the internal rate of return associated
23 with a steam turbine.

24 My understanding is that the internal
25 rate of return for a steam turbine would be higher than

1 for a combined-cycle unit; is that fair?

2 MR. BROWN: A. Our discussions with
3 industry have indicated that it is a faster payback,
4 shorter investment, and able to use different resource
5 elements like waste fuels rather than combined cycle.

6 Q. And, in fact, for the reasons that
7 you have mentioned, isn't it fair to say that a number
8 of developers will choose to maximize internal rate of
9 return or steam production by using steam turbines?

10 A. I think that's up to the proponent.
11 Some of them obviously already have. In project
12 proposals we are receiving to date this has not been
13 the case; they're not maximizing rate of return but
14 maximizing return, and that is building bigger
15 projects.

16 Q. On page 7 of Exhibit 340, Mr. Brown,
17 we have Interrogatory 5.14.254.

18 Perhaps, Mr. Chairman --

19 THE REGISTRAR: 321.42.

20 MR. WATSON: 321.42. Thank you.

21 ---EXHIBIT NO. 321.42: Interrogatory No. 5.14.254.

22 MR. WATSON: Q. And you will see there,
23 Mr. Brown, that it is an interrogatory from IPPSO. The
24 question is on page 21 of the 1989 plan. Hydro has
25 stated:

1 Most developers will choose to
2 maximize internal rate of return or steam
3 production.

4 And Question A says:

5 Is that still Hydro's position?

6 The answer is "yes." Is it fair to say that that is
7 still Hydro's position today?

8 MR. BROWN: A. When we did the 1990 NUG
9 plan, that is correct, in determining the 2,100
10 megawatts. In the preliminary forecast of 3,100 this
11 is not the case anymore.

12 Q. So between May 15th when this
13 interrogatory was answered and today, because of the
14 3,100 megawatts the answer is not "yes"?

15 A. The gas prices have continued to
16 decline. But this response was done in response to
17 Exhibit 83, the 1990 NUG plan, not what was happening
18 in May of this year.

19 Q. So, I believe your answer indicated
20 that while in the past internal rate of return was a
21 factor that was maximized, today you are saying that
22 straight return is being maximized as opposed to
23 internal rate of return?

24 A. I think the major differences in the
25 past, the projects were customer-driven and customers

1 were looking for quick paybacks, simpler technologies,
2 and possibly use of waste fuels, and they had very
3 little money for investment, so they were trying to
4 minimize their capital costs. They chose steam turbine
5 in that manner.

6 The business today is completely
7 different in that most of our developments and the rate
8 offers we have presented in earlier evidence has shown
9 a lot of third party developers who are not interested
10 in minimizing their investment but getting the highest
11 return, and they are choosing technologies, combined
12 cycle, that have capacities over five times the
13 technical potential that I have estimated.

14 Q. So in looking at your economic
15 criteria, Mr. Brown, if you are not talking about
16 maximizing internal rate of return anymore what are you
17 looking at maximizing? How are you changing your
18 economic criteria?

19 A. I think rate of return is still a
20 good figure to use. I think the proponents are
21 choosing to develop larger projects and get more of a
22 return. I am sure that if they adopted a different
23 technology they would get a higher rate of return but
24 get less money back in terms of volume.

25 It is just, you know, a trend that has

1 happened in the last year and a half. It started with
2 the RFP. We didn't think these were viable; they are
3 now viable. They are a lot larger.

4 There are a few steam turbine projects
5 that are being proposed, but most of it is combined
6 cycle, which is the reason why we are continuing with
7 this method.

8 Q. The 1990 NUG plan assumes that 100
9 per cent of each site will be developed, as indicated
10 in a number of places, most recently I guess at
11 Interrogatory 5.9.62, which is on page 8 of Exhibit
12 340.

13 Perhaps I could have a number for that
14 interrogatory, please?

15 THE CHAIRMAN: 43.

16 THE REGISTRAR: Again, 321.43.

17 THE CHAIRMAN: 5.9.62.

18 MR. WATSON: That's page 8 of Exhibit
19 340.

20 ---EXHIBIT NO. 321.43: Interrogatory No. 5.9.62.

21 [2:50 p.m.]

22 MR. WATSON: Q. That's the assumption
23 for the 1990 NUG plan. Is the same assumption made in
24 the 1991 NUG plan?

25 MR. BROWN: A. Right. The last time I

1 saw the 1991 NUG plant in development, this is the same
2 assumption that we are using. But I think it is
3 important to recognize that the 100 per cent is not a
4 ceiling in this particular case. The 100 per cent is
5 essentially Ontario Hydro's calculation of the
6 technical potential.

7 As I mentioned earlier, some people are
8 proposing projects at 500 per cent of the technical
9 potential, and my estimate is the average of all
10 proposals to -- some will be higher, some will be
11 lower. On average we expect to be at 100 per cent of
12 the technical potential we estimate.

13 Q. That 100 per cent assumption was not
14 made in the 1989 plan where you assumed 35 cent
15 potential development -- sorry, 35 per cent development
16 at each site. I understand the basis for that
17 assumption was the actual identified projects that
18 Hydro was aware of, and they had basically developed
19 approximately 32 per cent of the sites; is that fair?

20 A. That's correct.

21 Q. In looking at page 2 of Exhibit 340,
22 we are back to the consultant's review of the 1989 NUG
23 plan, and a little further down, the first bullet where
24 the consultant is indicating that you have been
25 reasonable in your estimates, the consultant refers to

1 the 35 per cent figure.

2 Now, could you tell us what caused the
3 change of the 35 per cent to the 100 per cent from 1989
4 to 1990?

5 A. The 1989 NUG plan was done with
6 project information that was dated from late '88 to
7 early 1989, and at that time of the 100 proposals we
8 had before us, they represented about 32 to 35 per cent
9 of the technical potential of those sites that we
10 estimated.

11 When we did the 1990 NUG plan there was
12 some weeding out of projects that were no longer
13 active, and a lot of new projects that came in,
14 especially under RFP No. 1 that greatly increased the
15 potential to -- I can't recall the number, but I
16 believe it was over 100 per cent on average.

17 DR. CONNELL: Mr. Brown, in a
18 combined-cycle cogeneration project where does the
19 process steam fit in, is it between the two electric
20 power cycles or does it come at the end?

21 MR. BROWN: It is normally afterwards.
22 You produce the electricity and the steam coming off
23 the steam turbine goes to process. It's the last loop.

24 DR. CONNELL: Thank you. It's low
25 pressure by that time.

1 MR. BROWN: That's correct.

2 MR. WATSON: Q. You are talking about
3 RFP No. 1, Mr. Brown. Is it fair to say that some of
4 the sites proposed in RFP No. 1 are less than the 100
5 per cent combined-cycle potential?

6 MR. BROWN: A. There may be some that
7 are less than 100 per cent.

8 MR. WATSON: Now, Mr. Chairman, it's not
9 in my package, but I have a separate interrogatory that
10 I would like to refer to now. It's No. 5.14.181.

11 THE CHAIRMAN: Yes, we have it.

12 THE REGISTRAR: That will be 321.44.

13 THE CHAIRMAN: Thank you.

14 ---EXHIBIT NO. 321.44: Interrogatory No. 5.14.181.

15 MR. WATSON: Q. Mr. Brown, as I read
16 this interrogatory, it appears to me that four Leighton
17 and Kidd sites have been underdeveloped, approximately
18 158 out of 504 megawatts have been developed and that's
19 an average potential of about 30 per cent; is that
20 fair?

21 MR. BROWN: A. Yes, that's correct.

22 Q. And is it correct that the
23 underdeveloped portion of these sites has been kept in
24 the technical potential?

25 A. That is correct.

1 Q. Now, are you aware of any companies
2 that have put in facilities that have come back at a
3 later date and added to an existing facility?

4 A. Yes, I am.

5 Q. Do you have any information on that?
6 Is there a report or a study on that?

7 A. I am not sure, but I know Dow
8 Chemical has started off with gas turbines and later
9 upgraded to combined-cycle facilities. That's the only
10 one that comes to mind right now.

11 Q. And, Mr. Brown, if you will recall
12 when we a few minutes were looking at the tables from
13 the 1990 NUG plan, is it fair to say that the Dow site
14 was by far the largest site in that list of 37
15 projects?

16 A. That's correct.

17 Q. And, Mr. Brown, is it fair to say
18 that adding to an existing system is less cost
19 efficient than developing a full combined-cycle
20 potential system at the outset?

21 A. I am not sure. I think it could go
22 either way.

23 If there is already an infrastructure set
24 up to transfer the steam off the unit, it may be
25 cheaper just adding a gas turbine to an existing steam

1 turbine facility. There may be other occasions where
2 there may be significant civil works to squeeze the
3 generation into the existing facility that greatly
4 increases the costs and a greenfield site would be
5 cheaper in that case.

6 Q. But as I understand combined cycle,
7 Mr. Brown, and correct me if I am wrong, the whole
8 point is if you put in a gas turbine you are
9 anticipating putting in something at a later date, and
10 that's certainly what is reflected in Exhibit 3 in the
11 DSP; isn't that fair?

12 A. I don't think that's true.

13 Q. Doesn't the DSP refer to phasing of
14 combined cycles and phasing of integrated gasification
15 combined cycle plants?

16 A. For Ontario Hydro that's true.

17 Q. So that a planning philosophy for
18 these units that Ontario Hydro adopts is not
19 necessarily what occurs in the private sector?

20 A. This is up to the individual
21 proponents. I am just guessing what they are doing.

22 The ones that are coming in now are
23 coming in with combined cycle. From the original
24 proposals, in the earlier ones we had we had steam
25 proposals and it is possible to add on a gas turbine in

1 front of some of those.

2 I am not aware that people are
3 underbuilding initially on purpose for that future
4 expansion. It may be the design is based on their
5 steam requirements at the time or some other factors of
6 existing facilities such as their boilers or whatever
7 else is in there.

8 Q. Panel, I understand that cogeneration
9 feasibility model, which is referred to in the 1990 NUG
10 plan assumes a capital cost of \$960 per kilowatt for a
11 combined-cycle unit; is that fair?

12 A. That's correct.

13 Q. I believe that's an average based on
14 a range of \$800 to \$1,200?

15 A. I think those are industry numbers,
16 yes.

17 Q. Well, they are your numbers in the
18 plan, are they not?

19 A. Yes, but they are based on industry
20 information.

21 Q. Are you using the same numbers for
22 the 1991 NUG plan?

23 A. The proposals we are receiving today
24 have indicated our number is slightly high in terms of
25 the larger facilities. So our assumption that we are

1 considering is that that number will stay the same but
2 it would be in 1991 dollars rather than 1990 dollars.

3 Q. Mr. Brown, you indicated that the
4 figure was going to stay the same except that it would
5 be in 1991 dollars instead of 1990 dollars. What about
6 an identical NUG, the same sized NUG, is the situation
7 the same?

8 A. For 1990 to '91?

9 Q. Yes.

10 A. I believe the costs have stayed the
11 same, so it would just be an inflation adder.

12 Q. The \$960, does that include the cost
13 of transmission facilities that need to be built?

14 A. It's electrical transmission, gas
15 transmission, all costs to incorporate the facility.

16 Q. Do you have a breakdown of that \$960
17 figure?

18 A. No. The information is obtained from
19 proponents during discussion and they do not fill us in
20 on the exact information.

21 Q. Is there any way you can aggregate
22 that number, or have you aggregated that number to give
23 you some idea of how they feel the capital costs are
24 composed?

25 A. No. My only concern is that the

1 number is in the ballpark of what people are proposing,
2 and I do follow industry information such as press
3 releases and it is quite common to see a million
4 dollars a megawatt which is \$1,000 a kilowatt in press
5 releases in the United States and in Canada.

6 Q. Would it be possible to provide a
7 breakdown of that information, or are you not capable
8 of doing that?

9 A. No. 1, it's very site-specific, every
10 one would be different and I do not have the
11 information to make that breakdown.

12 Q. Just dealing with the transmission
13 part of that \$960, Mr. Brown. If all other things are
14 equal, given two sites with the same cogen potential,
15 or the same cogen system, the costs would be higher at
16 one site if more extensive transmission facilities were
17 required. That's just basic elementary analysis; is it
18 not?

19 A. You have to include the costs of the
20 transmission, but it may not be a function of distance
21 to the transmission line.

22 Q. I understand that. But if the
23 facilities were needed that would increase the costs?

24 A. That's correct.

25 Q. I assume it's true that some sites

1 will need to have transmission facilities added?

2 A. Definitely if it's a third party
3 developer. If it's one of our existing customers it
4 may not require that much in terms of transmission.

5 Q. Okay. Now, if you could envisage a
6 NUG that's located within the service territory of a
7 municipal utility, will that NUG be required to pay any
8 costs for wheeling for some sort of fixed charge for
9 the use of the utility's transmission and distribution
10 system?

11 A. This is negotiated with the utility
12 itself.

13 The first principle is the municipality
14 has first right to buy that your power. If the
15 municipality doesn't exercise that right, Ontario Hydro
16 buys it, our position is that this is a new source of
17 supply to the utility, not a wheeling contract.

18 Q. My understanding is that there are
19 situations where this is occurring. For instance, in
20 Ottawa there is such a situation; is this fair?

21 A. I think this is occurring all over.

22 Q. Are these costs, the costs for
23 wheeling or the fixed use for transmission and
24 distribution facilities, are they accounted for in the
25 cogen model that you have in the 1990 NUG plan?

1 A. Our \$960 is an average of all types
2 of cogenerators. If it costs more in a municipal
3 utility, then they would expect it on another -- the
4 particular project would be less than that and the
5 average will be \$960.

6 Q. Mr. Brown, I was talking capital
7 costs, though. What you refer to now is an ongoing
8 operating cost; is it not?

9 [3:05 p.m.]

10 A. You are referring to the wheeling
11 charge?

12 Q. Yes.

13 A. I am referring to the capital, I'm
14 sorry. You meant wheeling? No, it's not included in
15 the model.

16 Q. Sorry?

17 A. Wheeling is not included in the
18 model.

19 Q. All right. Now, Mr. Brown, whether
20 there is a wheeling charge or a fixed charge to cover
21 transmission facilities, these charges when added to
22 OM&A will increase the NUG cost, will it not?

23 A. If it is an annual cost, yes, it
24 would be treated like OM&A.

25 Q. Can you give us some idea, some

1 ballpark? Could they be raised by as much as 15, 20
2 per cent.

3 A. The OM&A figure because of wheeling?

4 Q. Yes.

5 A. I think it depends on how much is
6 involved in wheeling.

7 A lot of the municipal cogenerators have
8 a large degree of cogeneration, and they are only
9 exporting say a portion of the actual generation.
10 Then, I am not sure how much you could factor in. If
11 it is a straight sale, then obviously all of that money
12 would be added to the OM&A.

13 Q. So, what you are saying is it could
14 be significant, depending on the situation?

15 A. That's correct.

16 Q. Now, I understand in the 1990 NUG
17 plan that you assume a typical OM&A to be 0.4 cents per
18 kilowatthour for systems larger than 50 megawatts?

19 A. Yes, this is similar to what we used
20 in the '89 NUG plan, except that one was based on
21 dollars per kilowatt. This one is in cents per
22 kilowatthour.

23 Q. In fact, at Interrogatory 5.9.75,
24 which is at page 13 of Exhibit 340, you also deal with
25 that?

1 Perhaps I can get a number?

2 THE REGISTRAR: 321.45.

3 ---EXHIBIT NO. 321.45: Interrogatory No. 5.9.75.

4 THE CHAIRMAN: I'm sorry, Mr. Watson,
5 what page was that on?

6 MR. WATSON: That's page 13 of Exhibit
7 340, Mr. Chairman.

8 Q. And you will see in Answer "A",
9 regarding costs for OM&A, taxes and insurance, the cost
10 of .4 cents per kilowatthour is the generally accepted
11 industry standard for a combined-cycle gas turbine as
12 observed by Hydro in contract negotiations.

13 You mentioned that you have seen that in
14 contract negotiations. Have you seen that anywhere
15 else, or is that strictly based on contract
16 negotiations? Is there any documentation or studies to
17 support that figure?

18 MR. BROWN: A. I think it is supported
19 in Ontario Hydro's "Thermal Cost Review", Exhibit 35.
20 I believe the number is slightly less than this number.

21 Q. And, as you indicate, the figure of
22 .4 cents is what you have observed in contract
23 negotiations as well, and isn't it fair to say that
24 your evidence to date has been that in dealing with
25 developers and negotiating with them that they don't

1 always provide you with detailed economic information
2 for the project you are negotiating?

3 A. Not every developer would give us
4 this information.

5 Q. And isn't it fair to say that the .4
6 cents per kilowatthour is based, in some part anyway,
7 on the expectations of the developers who are
8 negotiating with you?

9 A. I think it's largely a function of
10 the size of the project, rather than the developer's
11 expectations. The larger the project, the smaller this
12 number will be.

13 Q. During the cross-examination by IPPSO
14 you were discussing small steam sites with capacity of
15 under 40,000 pounds. Is it fair to say that the
16 capital cost for a smaller facility would be greater
17 than for a larger facility?

18 A. We have seen reports where it has
19 been as high as 60 per cent higher.

20 MR. B. CAMPBELL: Mr. Watson, I
21 understand your question to be again in terms of cost
22 per kilowatt?

23 MR. WATSON: That's correct.

24 MR. BROWN: That's how it was answered.

25 MR. WATSON: Q. So as high as 60 per

1 cent on a per kilowatt basis, that would put them
2 outside of the \$800 to \$1,200 range per kilowatt; isn't
3 that fair?

4 MR. BROWN: A. That's correct.

5 Q. Panel, if you could look at page 14
6 of Exhibit 340?

7 And, Mr. Chairman, that is Graph A3.11
8 from Exhibit 143, which is the errata to the 1990 NUG
9 plan.

10 Mr. Brown, we see that that graph tells
11 us that as the capital cost increases the internal rate
12 of return declines; is that fair?

13 A. With all other factors frozen, that's
14 true.

15 Q. Yes. And just to refer back to your
16 evidence of a minute ago, 60 per cent greater than
17 \$960, according to my consultant who never makes a
18 mistake, is over \$1,500, and that would put you on this
19 graph at the \$1,500 mark, around a 6 per cent rate of
20 return; is that fair?

21 A. Assuming that it was a 60 per cent
22 increase, yes, that's true.

23 Q. I think it's fair to say that there
24 is no argument that at a 6 per cent rate of return
25 there just wouldn't be any development; is that

1 correct?

2 A. Just a point of clarification. This
3 graph assumes a certain capacity factor that is not
4 changing as well. But assuming -- like I said, as long
5 as nothing else is changed, the rate of return will go
6 down.

7 Q. The rate of return will go down, and
8 at 6 per cent you are not going to get any development,
9 all other things being equal?

10 A. Not unless there is another motive
11 other than financial.

12 Q. So that the financially inclined NUGs
13 will disappear but the altruistic ones will remain?

14 A. Well, there are people that build
15 projects for other reasons.

16 Q. Yes. And just to follow up on that,
17 Mr. Brown, one of the reasons that people build
18 projects is to provide steam, for instance, and the
19 electricity is a by-product, if you will?

20 A. Yes, that's true.

21 Q. And those people are not interested
22 in internal rate of return, and they are not interested
23 in maximizing electric potential from a site. They are
24 interested in getting the steam that they need for
25 their process; isn't that fair?

1 A. No, I don't think so. They
2 definitely need steam, and they are looking for the
3 cheapest way to provide steam, whether it be a boiler
4 or using cogeneration to supply that steam.

5 In terms of cogeneration, the larger ones
6 definitely would be driven by some rate of return
7 analysis because this project has to compete with the
8 main business in terms of obtaining capital to proceed.

9 Q. But we are talking about a 6 per cent
10 rate of return.

11 A. At 6 per cent it's doubtful people
12 would be supplying steam at that rate.

13 Q. Mr. Brown, this graph shows capital
14 cost versus internal rate of return. Has Hydro done
15 any analysis equating capital costs to megawatts?

16 A. Yes. That is provided in another
17 interrogatory, 5.9.78. It is the same graph as this,
18 but it's converted from capital cost to attainable
19 potential.

20 I don't think it was included in your
21 package.

22 MR. B. CAMPBELL: Mr. Chairman --

23 THE REGISTRAR: 321.38.

24 MR. B. CAMPBELL: Yes.

25 THE CHAIRMAN: 38?

1 THE REGISTRAR: Yes.

2 MR. BROWN: If you look at that
3 interrogatory, the second graph, A3.11A, is a megawatt
4 using capital cost as a variable. It's the second
5 graph.

6 MR. WATSON: Q. Mr. Brown, that's for a
7 year 2000 in-service. Has Hydro done an analysis for
8 1995 in-service?

9 MR. BROWN: A. No, we haven't.

10 Q. Would it be difficult for you to
11 produce a similar graph for 1995?

12 A. We can provide that.

13 Q. Thank you. Could I get an
14 undertaking number?

15 THE REGISTRAR: 322.19.

16 ---UNDERTAKING NO. 322.19: Ontario Hydro undertakes to
17 provide an analysis equating capital
18 costs to megawatts for 1995
in-service.

19 MR. WATSON: Q. Mr. Brown, still staying
20 with the cogen sensitivity graph, based on your
21 knowledge of the model and the variables, what would
22 you predict the results to be with a 1995 in-service
23 date if the capital cost increased to \$1,200 per
24 kilowatt? Can you just tell us roughly what would
25 happen with that graph?

1 MR. BROWN: A. I believe the graph for
2 year 2000 and 1995 are very similar, so the number
3 would be in the same magnitude as shown on this figure.

4 Q. Would it be slightly above or
5 slightly below?

6 A. I'm not sure right now. I might be
7 able to find that after the break.

8 Q. Just before we leave this, Mr. Brown,
9 talking about a \$1,200 capital cost, in the graph to
10 which you have referred us in Interrogatory 5.9.78 at
11 \$1,200 per kilowatt the potential is only 200
12 megawatts; is that fair?

13 A. That's correct. That is shown on
14 this graph.

15 Q. Mr. Brown, the basis for your
16 technical potential is the Leighton and Kidd steam data
17 base, and is it fair to say that there are well over
18 150 sites in that steam data base?

19 A. There was 188.

20 Q. And I believe the criteria that Hydro
21 has been using is a steam capacity factor of 70 per
22 cent or greater; is that fair?

23 A. The analysis of the 1990 plan showed
24 that 70 per cent was considered economic with the
25 assumptions used in the model.

1 Q. I believe that only 19 of those 188
2 sites have a steam capacity factor of greater than 70
3 per cent.

4 A. It is a small number, yes. I'm not
5 sure of the megawatts of those.

6 Q. Well, perhaps you could look at that
7 in the break. My understanding from calculating them,
8 looking at them myself, was that there were only 19.
9 Perhaps you could get back to us if that figure is
10 incorrect?

11 THE CHAIRMAN: I think he said it was a
12 small number. Is that good enough for your particular
13 analysis or the point you are trying to make?

14 MR. WATSON: Well, small in relation to
15 188...

16 Put it this way, Mr. Brown, if it is
17 something considerably different from 19 perhaps you
18 could let us know? Some people might --

19 MR. BROWN: 19 is -- I am not sure
20 whether it is 15 or 25. 19 is definitely in the
21 ballpark. But that represents 1,326 megawatts.

22 MR. WATSON: Q. Okay. And I believe,
23 Mr. Brown, of those sites eight have a size of less
24 than 50 megawatts. Does that sound reasonable?

25 MR. BROWN: A. That I don't have with

1 me.

2 THE CHAIRMAN: But they aggregate 1,326,
3 is that what you said?

4 MR. BROWN: Yes.

5 MR. WATSON: Q. Perhaps we could leave
6 it at this, Mr. Brown. It's certainly fair to say that
7 some of those 19 sites have a size of less than 50
8 megawatts and, based on what we have been discussing
9 before, those sites are going to have a higher cost per
10 kilowatt when we are trying to analyse the NUG
11 potential; isn't that correct?

12 MR. BROWN: A. If the proponent is
13 developing them at that size. As I mentioned before,
14 some people are coming in with projects a lot bigger
15 than technical potential.

16 Q. That's correct, but we have also seen
17 some people are coming in with sites under size as
18 well?

19 A. That's correct.

20 Q. Is it fair to say that the -- let me
21 start over, Mr. Brown.

22 If we assume that the \$960 per kilowatt
23 is the point where cogeneration is economic to develop,
24 I assume it goes without saying that you would expect
25 sites with a lower capital cost to be developed; is

1 that fair?

2 A. If it has the same steam capacity
3 factor and the price is less, it will be more economic.

4 Q. However, isn't it fair that it
5 doesn't always work the other way? I mean, sites with
6 higher capital costs just simply may not be economic to
7 develop above the 960; isn't that correct?

8 A. It's a function of capacity factor,
9 and that's how we treat it. It's not really a function
10 of price.

11 If it is a higher price he will need to
12 run his -- his steam demand will have to be higher than
13 70 per cent to be economic. He can't take one in
14 isolation.

15 Q. Mr. Brown, if you could turn to page
16 16 of Exhibit 340, that's a further excerpt from the
17 consultant's review of the '89 NUG plan, and at the
18 very top of the page the consultant in effect is
19 recommending to you that the NUG capital cost be
20 increased to between 1,000 and 1,050 per kilowatt; is
21 that fair?

22 A. In 1989, yes, that was true.

23 Q. In looking at increased capital costs
24 we have seen that not only would the internal rate of
25 return reduce and perhaps make certain NUG completely

1 uneconomic and therefore not developable.

2 Isn't it also fair to say that increasing
3 capital costs would increase the required steam
4 capacity factor that would be economic, so in effect
5 you would go -- you would require instead of 70 per
6 cent maybe 80 per cent at a particular site?

7 A. If all other factors remain the same
8 and the capital costs was increased, I would expect the
9 number would be higher than 70 to be economic.

10 [3:25 p.m.]

11 Q. And this, of course, would lead to a
12 smaller number of sites that would be eligible and a
13 smaller NUG potential?

14 A. That's correct.

15 Q. Have you done any analysis of what
16 would occur if you used the capital cost recommended by
17 your consultant of more than a \$1,000?

18 A. I think we just referred to that in
19 the previous Interrogatory where the if the capital
20 cost increased and the number came down from 1,326 to
21 where we were quoting 200 at the time.

22 Q. So that Interrogatory is the extent
23 of your analysis?

24 A. That's correct.

25 Q. Mr. Snelson, I think these questions

1 may be for you. My understanding is that project
2 appraisal avoided costs were used in the 1990 NUG plan
3 for forecasting, is that correct?

4 A. I'll start. Project appraisal was
5 used in the 1990 NUG plan.

6 Q. And that was used as opposed to the
7 planning avoided cost?

8 A. That's correct.

9 Q. I understand the rationale for that
10 was that Hydro determined that the avoided cost would
11 have to be raised in the 1990s and, therefore, you used
12 the project appraisal avoided cost?

13 MR. SNELSON: A. No, I don't believe
14 that was the rationale. I think we discussed it in
15 Panel 3, the rationale.

16 Q. That's what I thought too, Mr.
17 Snelson. I thought I was referring to the appropriate
18 section of the transcript. Perhaps I could refer you
19 to Volume 31, page 5426, and then over onto 5427.
20 What I was referring to was the top of page 5427.

21 A. Yes, I believe the transcript is
22 accurate there. It wasn't that we intended to raise
23 avoided cost. It was that we already had information
24 that we knew of that would tend to make avoided costs
25 rise, and so we expected that the next issue of avoided

1 costs would have higher project appraisal and planning
2 values, and we thought the project appraisal values
3 that were current at that time, mid 1990, were a
4 reflection of what we expected the planning values to
5 be when the update had been done.

6 Q. Okay. Now, as I understand it, Mr.
7 Snelson, in looking at page 17 of Exhibit 340, the very
8 last paragraph, project appraisal avoided costs are
9 higher, and you use them to give greater assurance of
10 achieving your forecasted amounts of NUGs, is that
11 fair?

12 A. Yes, that is correct.

13 Q. And the purpose of the planning of
14 avoided cost numbers is for planning over the long run?
15 Planning and forecasting over the long run?

16 A. Yes, and we generally use those for
17 setting the amounts to include in plans.

18 Q. Can you tell us which of the figures
19 were used in the 1991 NUG forecast? Either the
20 planning or the project appraisal?

21 MR. BROWN: A. We already answered that
22 the project appraisal was used in the 1990 plan.

23 Q. Sorry. I meant 1991 if I didn't say
24 it.

25 A. The 1991 will be using planning SICs.

1 Q. As I understand the new planning
2 SICs, they're approximately equal to the previous
3 project appraisal SICs, is that fair?

4 MR. SNELSON: A. Which particular set of
5 SICs are you referring to as the "new" and the "old"?
6 I think that would have to help to clarify the
7 discussion.

8 Q. Okay. The new is the ones that were
9 just released. I believe it's Exhibit 309.

10 A. Yes.

11 Q. The old ones were the ones that I
12 think you and I spent some time talking about before,
13 Mr. Snelson. I think they're at Exhibit 175.

14 A. Fine. It's just that the new and the
15 old in the previous discussion was a previous
16 generation to that.

17 Q. That's quite right.

18 Is it fair that the new planning numbers
19 are approximately equal to the old project appraisal
20 number?

21 A. There are some variations year to
22 year.

23 Q. No, don't get me wrong, Mr. Snelson.
24 I am not trying to suggest that they're identical
25 numbers figure by figure.

1 A. No.

2 Q. I am just trying to suggest that by
3 and large they give you the same values, the same rough
4 values. There's not a major distinction between the
5 old project appraisal and the new planning numbers.

6 A. They appear to generally give results
7 within about 10 percent.

8 Q. And so, of course, that means that
9 the planning numbers for the 1991 forecast of course
10 are higher than those used in the 1990 forecast?

11 A. Well, this is where we come into the
12 different generation. We have just compared the August
13 '91 to the February '91. The values that were current
14 at the time of the preparation of the 1990 plan were
15 produced in mid 1990, and one set further back, so my
16 comments aren't relevant to the 1990 NUG plan.

17 Q. Well, okay. Well, then could you
18 help us out, Mr. Snelson, about how the planning
19 numbers are different?

20 A. The 1990 NUG plan, my understanding
21 is that the project appraisal values based on the July
22 '90 addition of system incremental costs were used, and
23 that was the project appraisal values we used. The
24 current planning values appear to be a little higher
25 than the project appraisal values that we used at that

1 time.

2 Q. Now just so we're not confused.

3 Getting back to the current SICs, we have been talking
4 about the planning numbers. Is it fair to say, fair to
5 generalize that the project appraisal numbers are even
6 higher than the planning numbers?

7 A. That is correct.

8 Q. And those are the numbers that are
9 used in analyzing specific NUG projects?

10 A. Yes.

11 Q. Now, Panel, if we could just turn
12 our attention briefly to the 1,000 megawatts of new
13 NUG, shall we call it. Now once that 1,000 megawatts
14 of capacity is added for projects that you expect to
15 commit, isn't it true that your original 1990 NUG plan
16 forecast is met?

17 MR. BROWN: A. All the new projects that
18 are accepted rate offers go into service, and you add
19 the existing in-service and committed, that will exceed
20 the estimate by the year 2000 in the 1990 NUG plan.

21 Q. Now, Mr. Snelson told us we are using
22 project appraisal numbers for particular NUG projects,
23 and they're higher, and as we found out in Panel 3,
24 that is a new system that has just been implemented by
25 Hydro in the last year or so.

1 Isn't it true that if you have already
2 reached the forecast then you don't really need the
3 higher project appraisal values in the future?

4 MR. VYROSTKO: A. I believe it's my turn
5 now.

6 I think the scenario that you're painting
7 is exactly correct. That as we move forward with the
8 success with projects, we move away from the project
9 appraisal. More towards the planning numbers in the
10 future.

11 [3:35 p.m.]

12 Q. That's what you anticipate happening?

13 A. That's correct.

14 Q. Just before I leave that, Mr.

15 Vyrostko, you indicated that you intend to move away
16 from that in the future. The premise of my question
17 was that you have already met your forecast now with
18 the higher figures, why wouldn't you be moving away
19 from it now?

20 A. I think as we mentioned previously in
21 other evidence, we have been negotiating projects up
22 until approximately two months ago. And as a result of
23 the changes that we saw coming with respect to the
24 successes of those projects, we pretty well have gone
25 into a moratorium, we are sort of into a holding

1 pattern until we redefine our guidelines in on Friday
2 and then talk about new projects thereafter.

3 So in essence, we really haven't been
4 proposing any new offers over the last two months. So
5 prior to that we were working the project appraisal
6 because again we weren't sure with respect to the
7 successes we were going to have. I think now we know
8 where we are going and so therefore we have got a
9 different position.

10 Q. So, your answer then is moving away
11 in the future, basically is after Friday?

12 A. Yes, I suspect so.

13 Q. Turning to that 10 per cent
14 preference adder that we have discussed, that you have
15 discussed with other people, the 10 per cent preference
16 adder was included in the purchase rate in the cogen
17 model; is that fair?

18 MR. BROWN: A. The full 10 per cent was
19 included, yes.

20 Q. And so the full 10 per cent is
21 included. It's included for all years; is that
22 correct?

23 A. In the economic analysis of
24 cogeneration, yes, it's assumed for the life of the
25 plant.

1 Q. And can we conclude then that the
2 preference adder is going to continue in the future,
3 Mr. Vyrostkco?

4 MR. VYROSTKO: A. Yes, it will.

5 Q. So this isn't similar to the
6 situation we were just describing with respect to the
7 project appraisal figures here. You are going to
8 continue the 10 per cent with respect to NUG projects?

9 A. I think those are two separate
10 questions and two separate issues, project appraisal
11 versus having a preference adder.

12 Q. No, I wasn't trying to equate them.
13 I just wanted to be clear that the 10 per cent is going
14 to continue in the foreseeable future.

15 A. Clearly I think we have said the 10
16 per cent adder recognizes high-efficiency cogeneration
17 and that's the direction we are heading.

18 Q. Have you look at consequences of
19 whether the adder was removed or reduced?

20 A. Recently we haven't, no.

21 Q. You say recently, when did you look
22 at it?

23 A. I think when we were developing the
24 preference adder at that time we were aware of the
25 implications of going towards that.

1 Q. And that's the analysis that we dealt
2 with in Panel 3. Perhaps Mr. Snelson can help us with
3 that. I don't want to go into it again, but that's
4 when you looked at the ramifications of reducing or
5 removing the 10 per cent.

6 MR. SNELSON: A. I believe that would be
7 the time period that Mr. Vyrostk was referring to.

8 Q. Now, the 10 per cent is for heat
9 rates under 10,000, and it's on a sliding scale up to
10 100,000, and I understand that's under review right
11 now, but that's historically what it has been; is that
12 correct?

13 MR. BROWN: A. To correct you, your
14 assistant will help you. It starts at a zero per cent
15 adder at 10,000 btu's per kilowatthour and slides
16 between 6,000 btu's per kilowatthour where a full 10
17 per cent is used and the cogeneration model has a heat
18 rate of 4,800. So, it's definitely within the 10 per
19 cent.

20 Q. We have been talking about, in this
21 panel, major supply NUG. Now, are major supply NUGs
22 eligible for the 10 per cent premium?

23 A. If they fit on the sliding scale
24 somewhere depending on the project.

25 Q. And the 350 megawatt electricity only

1 site, if it fits on the scale that would qualify?

2 A. That was practice to all NUGs at the
3 time.

4 Q. Can you tell us what the heat rate is
5 of that 350 megawatt unit? Is it around 8,000?

6 A. I think for a combined cycle, if you
7 look at a thermal cost review, combined-cycle plant is
8 around 8,000. I am not aware of the particulars of
9 that, it's a particular project.

10 Q. So assuming that it was a typical
11 combined cycle, it would be getting 5 per cent premium?

12 A. I think it's in the order of 3 to 5
13 is my recollection.

14 Q. I assume the same thing applies for
15 overdeveloped cogeneration sites, they are also
16 eligible?

17 A. That's correct.

18 MR. VYROSTKO: A. Excuse me, are you
19 talking about previously or are you looking at the
20 future?

21 Q. I had been talking previously.
22 Perhaps I could just ask one or two more questions on
23 previously and then we could ask some questions about
24 future.

25 In dealing with a cogeneration site, is

1 the 10 per cent applied to the site as a whole, the
2 overall heat rate, or is it applied only to the
3 cogeneration part?

4 Let me give you an example. You have
5 referred to a 150 megawatt unit of which 7 was for
6 cogen and 143 was oversized cogen. The heat rate you
7 are looking at, is that for the 150 or the 7?

8 MR. BROWN: A. The whole thing.

9 Q. The 150.

10 And the extra 1,000 megawatts, again that
11 will also be eligible for the preference adder; is that
12 correct?

13 A. They have accepted rate offers and
14 the practice at that time was to use that methodology,
15 yes.

16 Q. Now, Mr. Vyrostk, I think you are
17 offering to tell us about what is happening in the
18 future. I think we would be...

19 MR. B. CAMPBELL: I didn't hear that.

20 MR. VYROSTKO: I don't believe I was
21 offering that, no.

22 MR. WATSON: Q. Perhaps I could ask you
23 about that. Can you give us any information on what is
24 going to happen with the preference adder in the
25 future?

1 MR. VYROSTKO: A. I think we said that
2 already with one of the previous intervenors, that what
3 we expect is a guideline that will have an absolute cut
4 off. There will be a qualification at one point in
5 that you either make it as a preferred NUG or you
6 don't. If you don't make it, we don't discuss it, it
7 is just not a qualified project. There is no sliding
8 scale.

9 Q. Can you give us any details of that
10 now or is that something that's going to be released on
11 Friday?

12 A. I would prefer to release it to the
13 proponents on Friday.

14 Q. Okay, perhaps after I have had a
15 chance to look at that, I can come back and ask you
16 some more questions.

17 THE CHAIRMAN: Would this be a good time
18 to take the break?

19 MR. WATSON: Yes, that is fine, Mr.
20 Chairman.

21 THE CHAIRMAN: Fifteen minutes.

22 THE REGISTRAR: The hearing will take a
23 fifteen-minute recess.

24 ---Recess at 3:45 p.m.

25 ---On resuming at 4:05 p.m.

1 THE REGISTRAR: Please come to order.

2 This hearing is again in session. Be seated, please.

3 THE CHAIRMAN: Mr. Watson?

4 MR. WATSON: Thank you, Mr. Chairman.

5 Q. Panel, just before the break we were
6 talking about the preference adder.

7 Now, as I understand it, the bottom of
8 the scale is the 10,000 btu heat rate and that's
9 roughly equivalent to a typical Hydro coal plant; is
10 that fair?

11 MR. SNELSON: A. Yes, that is typical of
12 the actual operation of our coal-fired plants. The
13 actual design heat rate might be closer to 9,000, but
14 because of stops and starts, the observed heat rate
15 tends to be a little bit higher.

16 Q. Is it fair to say that Hydro is
17 capable of installing gas-fired resources which have a
18 high rate lower than 10,000?

19 A. Yes, that is correct, and the
20 efficiencies are given in the thermal cost review.

21 Q. Right. And if they did install such
22 a generator, would they receive a credit to reflect the
23 preference in the cost calculations?

24 A. The preference adder is a preference
25 in our avoided cost methodology. When we are deciding

1 to build our own generating resources, we are not using
2 the avoided cost methodology, so it wouldn't apply.

3 Q. Is it appropriate to give a
4 preference credit to a facility that's similar to one
5 that could be built by Hydro?

6 A. I think that's one of our concerns
7 and one of our reasons for rethinking how we treat
8 major supply non-utility generation.

9 Q. Okay. Perhaps I will stop there and
10 listen to what happens on Friday, and I may come back
11 and pursue that at that time, Mr. Chairman.

12 THE CHAIRMAN: Okay.

13 MR. WATSON: Q. Panel, I understand that
14 you have looked at purchase rates which are lower than
15 current purchase rates and you have provided a
16 sensitivity, and it's at page 19 of Exhibit 340. That
17 shows the cogeneration potential, megawatts plotted
18 against the purchase rate. The graph that's there is
19 the revised version of graph A3-13, which is found in
20 Exhibit 143, the errata to 1990 NUG plan.

21 In fairness, Mr. Chairman, the MEA has
22 added a few things to that graph. The three additions
23 are the words full avoided cost and the dotted lines,
24 less 4 per cent and the dotted lines, and then less 10
25 per cent on the far left side of the graph and there

1 are a number of dots, very few dots, three or four that
2 blend in with the line. They are difficult to see.

3 Now, Mr. Brown, I saw you looking at an
4 interrogatory, you have no difficulty with this graph.

5 MR. BROWN: A. No, it's a reproduction
6 of our graph using the data provided through an
7 interrogatory.

8 Q. Thank you.

9 There are no figures for under 4.2 cents
10 as a purchase rate. What do you expect would happen
11 under 4.2 cents?

12 A. There would be a significant decrease
13 in the attainable potential.

14 Q. Now, I understand that the
15 cogeneration feasibility model in the 1990 NUG plan
16 shows a purchase rate of 4.42 cents for the year 2000;
17 is that correct?

18 A. That's correct, in 1990 dollars.

19 Q. Yes. And is it fair to say that a 5
20 per cent reduction in the purchase rate would lead to
21 purchase rates of about 4 cents per kilowatthour?

22 A. I think your graph shows it around
23 4.2.

24 Q. 4.2, yes. And a 10 per cent would be
25 around 4 cents; is that correct?

1 A. That's correct.

2 Q. And is it fair to say that below 4
3 cents, in effect, you are having no achievable
4 cogeneration, and that's reflected in your
5 Interrogatory 5.9.77, which is at page 20 of Exhibit
6 340?

7 A. Other than what is already signed up
8 at the rate at the time, I wouldn't see significant
9 growth after that.

10 THE REGISTRAR: That will be 321.46.

11 THE CHAIRMAN: Thank you.

12 ---EXHIBIT NO. 321.46: Interrogatory No. 5.9.77.

13 MR. WATSON: Q. When you say after that,
14 you are meaning below that?

15 MR. BROWN: A. Well, counting for the
16 ones we already have, there wouldn't be anything after
17 that below 4 cents, and this is based on purchase
18 cogeneration.

19 Q. You mentioned that was purchase, can
20 you give us a rough idea of where load displacement
21 would be?

22 A. Most of the activity we are seeing
23 now is purchase, so the NUG plan has focused on
24 assessing the attainable potential for purchase. So
25 this study was done on back of the envelope

1 calculations including backup power charges have
2 indicated the economics are essentially the same.

3 Q. Are essentially the same?

4 A. Yes. But if you decrease the
5 purchase rate for purchase NUGs, the rate of return for
6 load displacement is not going to decrease because it's
7 based on the price of electricity being sold, not
8 avoided costs.

9 Q. Can you tell us roughly where that
10 would fit into that graph? If you did it on a cost per
11 kilowatthour basis, would be it be around 4.2 cents?

12 A. I don't have the number. The
13 projects that we were looking at, that were being
14 proposed to us, some of them were coming in both as
15 load displacement and purchase, depending on who the
16 developer was at the time, and the economics of those
17 project proposals were essentially the same.

18 Q. Now, Mr. Brown, the 4.2 cents also
19 includes a transmission adder of about 4 per cent; is
20 that fair?

21 A. Yes. 4 per cent was included to
22 incorporate the fact that it was being hooked up to the
23 115 kV system.

24 Q. And in your analysis every NUG
25 receives that credit; don't they?

1 A. They could receive greater than that
2 at the distribution level.

3 Q. But they get at least that.

4 A. The ones to date have been at the 115
5 level, that's right.

6 Q. Is it fair to say that not every NUG
7 site is going to reduce the need for transmission?

8 MR. SNELSON: A. I believe that was our
9 evidence, yes.

10 Q. I suppose, Mr. Snelson, in fairness,
11 the opposite is true as well. Certain sites will
12 reduce the need for transmission, certain sites will
13 increase the need for transmission.

14 A. Yes. The 4 per cent -- or the
15 estimates that we use for transmission credits in our
16 avoided cost calculations are intended to be the
17 average saving, and so some projects may in fact have
18 larger transmission savings than indicated in our
19 avoided cost calculation and some in fact may have
20 lesser savings.

21 Q. Now, if the transmission adder were
22 removed then, in effect, the avoided cost would be
23 reduced by about 4 per cent; isn't that fair?

24 MR. BROWN: A. Yes. Our number includes
25 a 4 per cent so without it, it would be 4 per cent

1 less.

2 Q. And that would reduce the purchase
3 rate; is that not fair?

4 A. All else being equal, that's true.

5 Q. And just looking at the sensitivity
6 that you have produced, reducing by 4 per cent you are
7 going to arrive at a situation where you have less than
8 1,000 megawatts of achievable potential; isn't that
9 fair?

10 A. Based on the 1990 NUG plan analysis,
11 it looks like it's around 800 megawatts.

12 Q. Panel, if you could turn to page 22
13 of Exhibit 340, please.

14 [4:15 p.m.]

15 That's a cogeneration sensitivity
16 plotting rate of return against natural gas price.
17 Does this sensitivity reflect the current price of gas?

18 A. This was based on the 1990 NUG plan.
19 These represent the starting price of gas in 1990,
20 assuming the same escalation as the forecast, so we are
21 just lowering the line down -- or raising it in this
22 particular case.

23 Q. Sorry, the last thing you said, Mr.
24 Brown, you said in effect you would be raising this
25 line?

1 A. Sorry, referring to the bottom, the
2 "x" axis, that is showing the changes in gas price, the
3 starting gas price that we use in our model.

4 Q. And if you use the prices for the
5 year 2000, is it fair to say the graph will shift
6 upwards?

7 A. This is the year 2000 this graph.
8 This is a project going in-service in the year 2000,
9 and that's why I tried to mention it follows the gas
10 curve. The actual starting price of this particular
11 project will be the number in the forecast at that
12 time, increased by the starting price here.

13 Q. Has Hydro done a sensitivity analysis
14 on different escalation factors for gas prices?

15 A. This was done in the 1989 NUG plan,
16 but we are not doing that type of analysis anymore.
17 All we are doing is changing the starting price.

18 Q. Why did you choose to discontinue
19 using different escalation factors?

20 A. In the '89 NUG plan we assumed a
21 fixed escalation of gas, essentially tied to our direct
22 customer rate, and so then we can do a sensitivity
23 analysis on the escalation rate because it's one
24 number.

25 Our 1990 and the 1991 NUG plan is using

1 Hydro's official gas forecast and every year the
2 escalation may be different.

3 Q. So there are no escalation factors
4 used in your cogeneration feasibility model?

5 A. There is escalation. It's already
6 built into the forecast. In Exhibit 320, when I
7 --presented the gas forecast, it did show escalation in
8 the gas price.

9 We are assuming in this particular graph
10 that the escalation factors year by year will remain
11 the same and we are just changing the starting price.

12 Q. What are those escalation factors?

13 MR. SNELSON: A. I believe it's on the
14 next page of your exhibit, Mr. Watson.

15 Q. Oh. Mr. Snelson, you are referring
16 to page 23 of Exhibit 340. That is a graph showing
17 natural gas forecasts. Is there any data to support
18 that?

19 MR. BROWN: A. I have the year-by-year
20 numbers and the escalation -- I believe it's the
21 escalation year-by-year, and they range from about 4
22 per cent to as high as 11 per cent in particular years.

23 Q. The 1990 NUG plan, I assume that's
24 based on Exhibit 14; is that fair?

25 A. That is the 1989 "Energy Trends

1 Report"?

2 Q. Yes.

3 A. Yes.

4 MR. SNELSON: A. I'm sorry, Exhibit 14
5 is the November, 1990 "Energy Price Trends Report"--

6 Q. Yes.

7 A. --which I don't believe...

8 MR. BROWN: A. That is the one we are
9 planning to use for the '91 NUG plan.

10 MR. SNELSON: A. The 1990 NUG plan
11 preceded the production of Exhibit 14.

12 Q. Okay. So Exhibit 14 is going to be
13 used for the 1991 NUG plan?

14 MR. BROWN: A. In my exhibit, which is
15 your page 23 where it says 1991 natural gas forecasts,
16 that is from that exhibit.

17 Q. Okay.

18 A. I will add, though, that since we
19 haven't issued our NUG plan yet there is another one
20 being issued, and I am hoping to use the new one.

21 Q. So there is an update to Exhibit 14
22 as well?

23 A. Well, they are issued every November.

24 Q. Right.

25 A. And I am hoping now that I haven't

1 done my NUG plan I will be able to use the most recent
2 information, which is the latest one.

3 Q. Now, given that we know the 1990
4 price of gas, would it be more accurate to look at the
5 sensitivities of NUG to the escalation of gas price
6 rather than to the starting price as you have done on
7 page 22 of Exhibit 340?

8 A. Bearing in mind that every year would
9 be different, I don't know if looking at sensitivity in
10 escalation in any one particular year would help you.
11 By changing each individual escalation year-by-year by
12 the same amount you might be able to come up with an
13 answer. We haven't done that.

14 Q. In Panel 1 we were talking about
15 forecasts, and we were referring to high, median and
16 low forecasts. Did you do something like that for the
17 gas forecasts?

18 A. No, we take the industrial sector
19 direct sales forecast.

20 Q. Is it fair to say that if gas price
21 increased at a faster rate than what is forecast NUG
22 development is going to be lower?

23 A. Again, if that is the only change,
24 yes, you are right.

25 Q. Panel, if you could look at page 24

1 and page 25 of Exhibit 340?

2 Page 24 is Table A3-7 revised and page 25
3 is Table A3-7 as originally shown in the 1990 NUG plan.

4 At the bottom of page 25 there is a
5 sensitivity, and that does not appear to be included on
6 page 24. Can I assume that the sensitivity is the same
7 and therefore it didn't need to be revised?

8 A. That's not true. This information on
9 page 25 is incorrect. That's why we issued the errata.
10 It was based on the old spreadsheet. The corrected
11 one, Exhibit 143, has new information, and I apologize
12 for not showing the sensitivity with that.

13 Q. Could you provide that sensitivity to
14 us?

15 A. Yes, I can. It was included in the
16 earlier undertaking, 322.19, where you are requested
17 changes in capital cost. You will notice on page 25
18 the capital cost and natural gas sensitivity is all in
19 one table. So I will provide the entire chart for you
20 in that undertaking.

21 Q. Thank you. That's fine, Mr.
22 Chairman. We can just incorporate everything into one
23 undertaking.

24 THE CHAIRMAN: All right. Thank you.

25 MR. WATSON: Q. On page 25, Mr. Brown,

1 looking at the sensitivity, I know the figures are
2 wrong and I don't want to deal with specific figures,
3 but perhaps we could just look at it directly.

4 It's certainly fair to say that at \$1,000
5 per kilowatt system costs when you look at a gas price
6 of \$2.80 and compare that to a gas price of \$3.10 you
7 are getting almost a 2 per cent drop in return on
8 equity. That's what this graph shows.

9 I assume it's fair to say that your new
10 numbers would show something similar, certainly the
11 same directionally and something in the same magnitude?

12 MR. BROWN: A. I can provide that for
13 you right now.

14 Q. Okay.

15 A. The \$1,000 per kilowatt at \$2.80, the
16 number 12.87, and increasing the starting price to
17 \$3.20 --

18 Q. Sorry, \$3.10.

19 A. Sorry, \$3.10. It goes to 11.94.

20 MR. WATSON: If I could have a minute
21 please, Mr. Chairman?

22 Q. Panel, the 1990 NUG plan discusses
23 constraints on the natural gas supply system. The
24 eastbound pipeline system apparently has no spare
25 capacity. I assume you expect this constraint to

1 affect natural gas prices?

2 MR. BROWN: A. I don't remember saying
3 that it is full. Indications from TransCanada
4 PipeLines to us are that -- and I believe it was
5 provided in an interrogatory that they can meet the
6 planned quantities with the three-year notice.

7 MR. SNELSON: A. The interrogatory
8 number I believe is 5.14.194.

9 THE REGISTRAR: That will be number
10 321.47.

11 THE CHAIRMAN: Thank you.

12 ---EXHIBIT NO. 321.47: Interrogatory No. 5.14.194.

13 MR. WATSON: Q. And that three years
14 that you are referring to, that's the lead time
15 required to expand pipeline capacity; is that fair?

16 MR. BROWN: A. It's to make enhancements
17 to the pipeline. I don't believe it's adding a new
18 pipe in the ground. I believe it's just fixing up
19 certain stations that happen to be bottlenecks.

20 Q. Do you know whether NEB approval is
21 required for that?

22 A. I am not sure of the approval
23 process, but the three years includes all necessary
24 approvals.

25 Q. Are you aware that when gas companies

1 make NEB applications they use what is called a "firm
2 service queue"?

3 A. I believe there is a queue on the
4 pipeline, yes.

5 Q. My understanding is that it is based
6 on firm service; is that fair?

7 A. I am only aware of NUG involvement in
8 the pipeline, and I believe that would be firm.

9 Q. I suppose it goes without saying that
10 pipeline constraints as well as gas supplies drive the
11 price of natural gas?

12 A. One of the factors would be supply.

13 Q. I suppose it's fair to say that there
14 is a significant amount of uncertainty with respect to
15 the forecast of natural gas price?

16 A. I am not a natural gas expert.

17 MR. WATSON: I think Mr. Campbell was
18 about to object. He was probably going to tell me that
19 we should deal with this in Panel 8, Mr. Chairman. I
20 assume I am paraphrasing Mr. Campbell correctly.

21 THE CHAIRMAN: I haven't heard him yet.

22 MR. B. CAMPBELL: He is an excellent mind
23 reader.

24 MR. WATSON: Q. Panel, if you could turn
25 to page 26 of Exhibit 340? Again, this is the

1 independent consultant's review of the 1989 NUG plan.

2 The second bullet, the paragraph that
3 starts with "we concur", if you look at the third
4 sentence, fifth line, starting with the words "after
5 reviewing", is it fair to say that your consultant's
6 review of the 1989 plan stated that NUG developers see
7 more risk with gas prices than is shown in Hydro's
8 assumptions?

9 MR. BROWN: A. Based on the 1989 NUG
10 plan this is a valid assumption, which is why we
11 checked into our gas forecast, and one of the reasons I
12 put it in Exhibit 320, it was a good gas forecast of
13 people who are getting gas in 1989, but it was not a
14 true indication of what we expect people to get gas for
15 in the later years of the plan.

16 The gas forecast to me was an
17 underestimate of the gas price in future years for
18 future projects, and that's why we show it over 5,000
19 megawatts of economic potential, and the consultant is
20 coming back saying he agrees that there is no way you
21 should get 5,000 megawatts of economic potential.

22 Q. On the next page, Mr. Brown, page 27
23 of Exhibit 340, there is another survey, this one
24 conducted by Coopers & Lybrand on the NUG industry on
25 behalf of Ontario Hydro, and this is included at

1 Interrogatory 5.14.80.

2 MR. B. CAMPBELL: That is 321.24.

3 THE REGISTRAR: Correct.

4 MR. WATSON: Q. If you look at the
5 second paragraph at the top of the page, this report
6 seems to indicate that the most critical concern for
7 this group - and we are talking about industrial
8 cogen - is the insured supply of gas over the long term
9 at a predictable and reasonable cost.

10 Would you agree that that's still a
11 concern, Mr. Brown?

12 MR. BROWN: A. In 1989 I believe the
13 people being surveyed would have been industrial users
14 who were getting gas at the spot market, so they're
15 obviously concerned about the volatility of natural gas
16 prices, especially back in 1989.

17 In negotiating of cogen projects we are
18 requesting 15 year gas contracts as our contract term
19 minus five years, which is usually a 15 year gas
20 contract. That would alleviate a lot of these concerns
21 because the gas price will be then known for 15 years.

22 Q. When you say the gas price will be
23 known for 15 years, isn't it fair to say that some of
24 those contracts have clauses that allow them to be
25 opened every five years?

1 A. There are typically reopeners at
2 certain stages over the contract, and they normally
3 have caps on those openers.

4 [4:36 p.m.]

5 Q. And if that's the situation today at
6 very low gas prices, isn't it fair to say that the
7 situation could be considerably different if gas prices
8 increase in the next few years?

9 A. In terms of getting reopeners with
10 caps on?

11 Q. No. Just dealing with the whole
12 issue but, yes, let's deal with reopeners. In fact,
13 there might not be as favorable a clause dealing with
14 reopeners. There may be more of them. There may be no
15 caps on them. All of those things are possibilities,
16 are they not?

17 A. It is very speculative based on the
18 nature of the industry. I can't comment on whether the
19 clauses will remain or not.

20 The cogeneration business is a good
21 business for a gas supplier in that it's a 365-day
22 business rather than just a heating season, which is a
23 lot of its customers.

24 Q. Mr. Brown, you mentioned the
25 volatility of gas prices. On page 28 of Exhibit 340

1 we have reproduced Table 6 of Exhibit 14 to these
2 proceedings that Mr. Snelson was just referring to.
3 In the far left-hand column it shows the year and then
4 the Ontario average wholesale price, and if you look
5 down that table you will see the 1975 and 1976 gas
6 prices escalated between 36 and 38 per cent; is that
7 fair?

8 A. That's what is shown here.

9 Q. And following further down in 1981
10 and '82, the prices increased by 13.5 and 12 per cent?

11 A. That's correct.

12 Q. And then '87, '88 and '89 there were
13 severe decreases, 10, 17 and 23 per cent?

14 A. That's correct.

15 Q. And, in fact, we have plotted that on
16 page 31 of Exhibit 340. A solid line indicates the
17 experience to date as reflected in Exhibit 14.

18 I assume you would agree with me that
19 between that period of 1975 to 1990 gas prices have
20 been highly volatile.

21 A. They have increased by over double
22 and came back to those levels.

23 Q. And also looking at Exhibit 14, the
24 average wholesale gas price increases from 1991 through
25 to 2005 are in the region of, I believe, minus, a

1 decline of 1 per cent up to almost 7 per cent. It
2 looks like 6.83 is the highest. That's what your
3 forecast indicates; is that fair?

4 A. Are you referring to Exhibit 14?

5 Q. 14, yes.

6 A. I believe there are years here
7 showing 11/12 per cent increases.

8 Is this the wholesale price?

9 Q. Yes.

10 A. My mistake. I was looking at Table
11 5, not Table 6. Yes, you are correct. Sorry.

12 Q. Thank you. Now, Mr. Brown, have you
13 had an opportunity to review recent NEB Canadian Energy
14 Supply and Demand report dated June of 1991?

15 A. I requested a copy of that report.
16 Unfortunately I...

17 Q. Has it come through?

18 A. Yes, it is in my office. I haven't
19 been able to do my own analysis on that report.

20 Q. If you look at page 33 of Exhibit
21 340, we have reproduced Table A4-1 of that report, and
22 that shows the real average retail prices by region and
23 sector, and if we could just continue looking at the
24 industrial natural gas sector, Mr. Brown.

25 You can see there are some typewritten

1 numbers opposite natural gas extending from 1989
2 through to 2010. Underneath are handwritten numbers,
3 and those have been added by us, and they reflect the
4 per cent increase. So as an example 3.2 per cent would
5 reflect the increase between the 1989 and the 1990
6 number in real terms. And we can see that for 1991
7 there is a 9 per cent increase expected.

8 Now, if you could turn to the next page,
9 page 34 of Exhibit 340, the middle column, the second
10 bullet, it refers to real transportation costs, and
11 they are assumed to increase by about 8 per cent in
12 1991 and are thereafter held constant.

13 MR. CHAIRMAN: Is this from the same
14 report? I take it it is.

15 MR. WATSON: It is, Mr. Chairman

16 MR. CHAIRMAN: Thank you.

17 MR. WATSON: It's page 19, Chapter 3 of
18 the same report.

19 MR. CHAIRMAN: Thank you.

20 MR. WATSON: Q. Now, Mr. Brown, my
21 understanding is that that 8 per cent is due to a one
22 time increase in the real transportation costs, and
23 this did not happen in 1991. Is it fair to say that
24 what underlies this increase is still valid and may
25 still occur?

1 MR. B. CAMPBELL: Whoa, whoa!

2 Mr. Chairman, I don't see how - Mr. Brown
3 has not put himself forward as a gas price forecaster -
4 how he can speak to underlying assumptions in reports
5 that he hasn't had an opportunity to read yet because
6 he's been writing interrogatory answers is not clear to
7 me, and I don't think it's a proper question for anyone
8 on this panel.

9 MR. WATSON: Q. Mr. Brown, are you aware
10 through your knowledge of the gas industry of any
11 concerns that the gas industry has which would be
12 reflected in large capital expenditures which would
13 then be reflected in increased costs?

14 MR. BROWN: A. My use of the gas
15 forecast is to take other Hydro experts analyses of
16 what is happening in Alberta and use that information,
17 which is why I lean on the energy price trends report,
18 so I think you will have to wait until Panel 8 or the
19 assumptions.

20 I will continue to use that report in
21 future forecasts. I can't speak to how the numbers are
22 derived.

23 Q. Mr. Brown, just so I'm clear, you get
24 the natural gas forecasts from other people in Hydro.
25 My understanding is that you believe the long-term

1 forecast is still a reasonable forecast to use despite
2 the current situation of low gas prices; is that
3 correct?

4 A. I will use that forecast. I believe
5 Hydro's forecast is very similar to the NEB forecast
6 and it does show increases in the long term.

7 Q. Well, maybe I will discuss the NEB
8 forecast with Panel 8 then.

9 Mr. Brown, I believe earlier you were
10 discussing the economics of major supply NUGs, and you
11 indicated that they varied by region, and one of the
12 reasons for that was the differences in gas
13 transportation costs across the regions; is that fair?

14 A. I have heard that, yes.

15 Q. Did you say that?

16 A. Yes, I also said that.

17 [4:45 p.m.]

18 Q. Can you tell us how they vary? Do
19 you have a study or a report or anything on that?

20 A. I don't have that information. The
21 proponents have told me that the transportation tolls
22 between distribution companies of gas and along the
23 TransCanada pipeline change regionally, and I believe
24 one of the areas is around the North Bay station, I
25 believe prices increase if you are east of that, and I

1 believe if you go towards the eastern end of the
2 province the prices increase for transportation. The
3 numbers I am not aware of.

4 Q. You said higher in the east, would
5 they also be higher in the north?

6 A. I am not aware of that, no.

7 Q. Can you help us as to whether the
8 natural gas forecast, that is Exhibit 14, reflects the
9 average cost across the province?

10 A. That's Ontario forecast, I believe
11 it's for the industrial sector and will represent
12 industries throughout Ontario.

13 Q. So that would be an average across
14 the province?

15 A. Yes.

16 Q. Would that average be weighted by the
17 amount of use expected in the region, for instance, or
18 any other factor?

19 A. I am not aware of how the numbers are
20 calculated.

21 Q. Okay.

22 MR. SNELSON: A. Exhibit 14 on page 31
23 does separate out the commodity cost of gas from the
24 transportation component in Chart 25 on page 31.

25 Q. Now, Mr. Brown, before I leave this

1 area, I would like to continue on by talking about the
2 gas supplies. I think it is pretty clear that our gas
3 supplies come from western Canada; is that correct?

4 MR. BROWN: A. That's one location.

5 Q. Is it fair to say most of it comes
6 from western Canada?

7 A. I am not sure of the proportion, but
8 there is some that comes in from United States, either
9 around the lakes or from Louisiana.

10 Q. Now, Mr. Brown, what I am going to do
11 is set up analogy for you and I am going to ask you to
12 comment on it, if you wouldn't mind, or other members
13 of the panel. The analogy is between buying gas from
14 the western part of Canada or some other source, and
15 buying electricity from Quebec.

16 Now, we know from looking at the plan
17 that Quebec's offer to sell electricity to Ontario was
18 rejected because of its high price, and my
19 understanding is that the price is high because Quebec
20 has a market in the United States.

21 Now, I also understand that western gas
22 is being thought of as a potential source for
23 California and other of the United States, and in fact
24 pipelines are being proposed to go down to the United
25 States.

1 Now, is it fair to say that Ontario may
2 face the same situation with respect to natural gas
3 that it is currently facing with respect to
4 electricity, that is natural gas from the west versus
5 electricity from Quebec?

6 MR. B. CAMPBELL: Hold it. Mr. Chairman,
7 that is a pretty global question, first of all. And
8 secondly, what it has to do with non-utility generation
9 is not clear to me. Perhaps my friend could help,
10 because otherwise I am going to take objection that it
11 has nothing to do with this panel that I can clearly
12 see. And thirdly, I think it is so inextricably tied
13 to expectations with regard to natural gas supply and
14 availability that it really can only fairly be dealt
15 with in that context. We do have a fuels division
16 person on Panel 8 for the express purpose of dealing
17 with these kinds of considerations.

18 THE CHAIRMAN: It's a possible
19 curtailment of gas supply, I suppose that's really what
20 it boils down to, due to western gas being diverted to
21 other areas other than the Province of Ontario.

22 If Mr. Brown knows anything about that in
23 any hard way, I suppose he can answer that. That's
24 really what you are asking.

25 MR. WATSON: That's precisely it, Mr.

1 Chairman. In fact, Mr. Campbell's third point answers
2 the second point. That's precisely it.

3 THE CHAIRMAN: If Mr. Brown knows, other
4 than his own guess or speculation, that is of no
5 interest to the Panel or probably to anybody else, if
6 he has got anything to offer in the way of evidence in
7 that area I suppose he could. But it really seems to
8 be a Panel 8 matter.

9 MR. BROWN: All I can add is I believe
10 those factors would have been included in the NEB
11 forecast. They are aware of all these export
12 opportunities and they would do that in their analysis,
13 so that would be in their gas forecasts. And Hydro's
14 gas forecast is very similar to the NEB gas forecast.

15 MR. WATSON: Q. I will pursue that with
16 them, Mr. Brown, if that's all you can add to that.
17 There are a number of other issues that I would like to
18 pursue as well dealing with the gas forecast and gas
19 prices, and I will deal with them then, Mr. Chairman.

20 Mr. Brown, before I leave this area,
21 there is one other issue that I would like to look at,
22 and that is if we could try to get some handle on the
23 amount of gas that we are talking about.

24 Mr. Chairman, I feel that's directly
25 relevant because it goes to the gas price and the

1 availability of gas.

2 Now, Mr. Brown, if you would look at page
3 29 of Exhibit 340, you will see that that's page 19-2
4 of Exhibit 3, and that's the approval requested and the
5 program associated with Plan 15. Over in the right
6 column you see the fossil program. Under CTU/CC we
7 have Phase 1 CTU and Phase 2 combined cycle, which is
8 they are both gas or oil. CTU/IGCC, Phase A, Phase 1
9 is a CTU, Phase 2 combined cycle, Phase 3 is coal.
10 Phases 1 and 2 probably gas, I assume. And down at the
11 bottom, paragraph No. 3, two CTUs.

12 I just did a rough calculation adding
13 up those figures, and Phase 2 under the CTU/CC was
14 1,442, Phase 2 of the CTU/IGCC was 2,882, and then the
15 two CTUs were another 672 each, and that's over 5,000
16 megawatts.

17 Now, if you turn to the next page which
18 is page 30 of Exhibit 340, and if you look at the
19 left-hand column at the top, the paragraph that starts
20 "event of large reductions", and that's continuing from
21 the page before and it says:

22 "In the unlikely event of large
23 reductions in gas prices (current and
24 forecast) gas-fueled, base loaded
25 combined cycle stations could become

1 economic. Such a station in place of one
2 Candu station would consume gas
3 equivalent to 25 per cent of the total
4 1988 Ontario consumption."

5 Now, is it fair to say, Mr. Brown, that
6 if in fact we have nuclear stations which range
7 anywhere from 2,000 to 3,500 megawatts, that just
8 looking at these gas options which are specified on
9 page 29 of Exhibit 340, we are into a situation where
10 these options alone would be using somewhere between
11 say 30 and 50 per cent of the entire 1988 Ontario
12 supply for gas?

13 MR. SNELSON: A. I am not sure I can
14 confirm the specific numbers.

15 We have done scenarios with base load
16 gas-fired plant which show numbers, particularly with
17 high load growth, that are comparable to the ones you
18 suggest.

19 Q. And if in fact we had a situation
20 where, let's surmise, that approvals are not given for
21 new nuclear plants, for instance, and you need other
22 base load plants to replace them, that's going to put
23 that figure even higher; isn't it?

24 A. I think that figure was based on base
25 load gas plants which would be consistent with not

1 having new nuclear base load plants. But I think to go
2 very much into this area we are going beyond Panel 5
3 matters and getting into the overall sort of balance of
4 the plan which is more like a Panel 10 matter.

5 Q. Okay, we deal with that in a Panel
6 10. I guess we can agree it will be a substantial
7 amount of gas.

8 A. Base load gas of many thousands of
9 megawatts is a substantial increase in the Ontario use
10 of natural gas.

11 Q. Just before we leave this, I suppose
12 trying to get a handle on this, we would have to add
13 things like major supply NUGs, there would also be a
14 requirement for gas supplies for other purchase NUGs,
15 load displacement NUGs, fuel switching is going to
16 consume gas, and also the current and future customers
17 in the three sectors, all of that's going to be added
18 to that as well.

19 A. All those factors affect the gas
20 requirements. And as I say, the overall balance is
21 really a Panel 10 matter.

22 Q. Mr. Vyrostopko, I believe that you were
23 testifying the other day about Class 34, and it's fair
24 to say that the summary of your evidence is that there
25 is a window of opportunity today for gas-fired NUG

1 projects; is that correct, and that's due to the low
2 gas prices?

3 MR. VYROSTKO: A. That's correct.

4 Q. As I understand your evidence, today
5 these projects may not need Class 34 to be economically
6 viable.

7 A. I believe that with gas prices the
8 way they are today, there are some projects that may
9 not need Class 34.

10 Q. And is it fair to say that your
11 forecast indicates and you believe that this window of
12 opportunity will not last?

13 A. That's correct.

14 Q. And when that window of opportunity
15 no longer exists, then we are back to the situation
16 where gas-fired NUGs will not be economically viable
17 without Class 34; is that correct?

18 A. Depending on what all of the other
19 elements are, whether it's the purchase rate from Hydro
20 or whether it's the natural gas prices, we could be
21 back to the situation where Class 34 will be an
22 important element in the viability of the projects.

23 Q. Wouldn't you agree that Class 34
24 allowance partly reflects some social benefits of
25 cogeneration or renewable resources?

1 A. I can't answer that, I don't know
2 that.

3 Q. Mr. Brown, the 1990 NUG plan errata
4 that has a revised Table 3-8 which is shown at page 35
5 of Exhibit 340. That's for the year 2000. And this
6 shows about an 11 per cent 20 year return on equity; is
7 that correct? That's pre-financing.

8 [5:00 p.m.]

9 MR. BROWN: A. At 70 per cent capacity
10 factor, that's correct.

11 Q. And that is pre-financing?

12 A. Yes.

13 Q. And this translates roughly to a
14 post-financing return on equity of about 15 to 25 per
15 cent?

16 A. It's a function of the debt ratio,
17 that's correct. It's a function of how much debt and
18 financing is available. It can go, I believe, 15 to 30
19 if you levered all the way.

20 I believe there is an undertaking to
21 provide that breakdown by per cent debt.

22 Q. And the payback with an 11 per cent
23 return on equity is 7.8 years; is that correct?

24 A. If you start accumulating the cash
25 flow on the far right-hand side, the first three years

1 you are paying out, and the next year you are putting
2 back in, and at 7.8 years you break even.

3 Q. Yes. So that's 7.8 years after you
4 start having a positive cash flow?

5 A. 7.8 years of operation.

6 Q. Right. Now, the next page, page 36
7 of Exhibit 34, is an excerpt from the Acres study that
8 was conducted in 1986 and I believe reported in
9 February of 1987, and at the bottom of that page under
10 title 6.3.2 it refers to "financial incentives".

11 Of course, it indicates that a major
12 barrier has been identified as a high payback period,
13 and the remedy could involve a number of options, and
14 one option is financial incentives, and what they are
15 referring to there is a three-year payback target; is
16 that fair?

17 A. I believe that's what Acres assumed
18 in determining its financial potential.

19 Q. And obtaining a three-year payback
20 instead of the 7.8-year payback that we saw a few
21 minutes ago requires a greater return on equity; is
22 that correct?

23 A. That's correct.

24 Q. Do you have a ballpark figure of how
25 much that would be?

1 A. No, I don't.

2 Q. Could I determine that from your
3 cogeneration feasibility model?

4 A. You might be able to do a sensitivity
5 analysis to determine that.

6 Q. Just so that I am sure, that is the
7 Lotus spreadsheet model--

8 A. That's correct.

9 Q. --that you are referring to?

10 A. (Nodding).

11 Q. Okay. Now, Mr. Brown, if you looked
12 at different industries - pulp and paper, chemical,
13 things like that - would you expect the payback to
14 differ between the various industries based on the
15 average rate of return for their own business?

16 A. It would vary by industry, and it
17 would also vary within an industry depending on the
18 situation of the company.

19 Q. I suppose it is possible that some
20 industries would require a higher payback than others?

21 A. As I said, it varies, yes.

22 Q. And if you look at page 37 of Exhibit
23 34 - that is, graph A3.12, revised, from Exhibit 143 -
24 that is cogeneration potential with megawatts plotted
25 versus rate of return. We certainly see that NUG

1 development is sensitive to the rate of return.

2 Now, if your rate of return was increased
3 from 11 per cent where the graph indicates that it
4 would be 1,326 megawatts to, say, 13 per cent you would
5 decrease your potential to 295 megawatts; is that
6 correct?

7 Just to help you out, Mr. Brown, that's
8 on page 40 of my exhibit. That is the answer to
9 Interrogatory 5.9.76?

10 A. Yes. By assuming a pre-financing,
11 after-tax return of 13 per cent, yes, that's true.

12 THE REGISTRAR: 5.9.76 will be 321.48.

13 ---EXHIBIT NO. 321.48: Interrogatory No. 5.9.76.

14 MR. WATSON: Q. Now, Mr. Brown, it's
15 fair to say that you expect a portion of the
16 cogeneration units to be developed by third parties; is
17 that correct?

18 MR. BROWN: A. A lot of the activity
19 today is from third party development.

20 Q. And in the case of a third party
21 developer they would require a 15 to 25 per cent
22 post-financing rate of return?

23 A. They accept rates of return less than
24 in general the industry does. Third party developers
25 are in the business of generation of electricity and

1 are looking at longer rates of return, similar to
2 Ontario Hydro.

3 The exact number, it would vary depending
4 on the proponent. It would be in the range of 10 to 15
5 per cent. This is after financing and after tax.

6 Q. Mr. Brown, you said it could be as
7 low as 10 per cent?

8 A. 10 per cent is used in some studies
9 as being the minimum rate of return, the economic rate
10 of return of a project.

11 Q. Let's just use that figure. If it
12 was 10 per cent and that is the rate of return which is
13 going to the third party developer, what sort of
14 benefit is going to the steam host?

15 A. Probably a reliable, low cost supply
16 of steam.

17 Q. So you are saying that the third
18 party -- sorry, the steam host is not going to require
19 some sort of financial return, or the steam is all he
20 is going to get?

21 A. Normally, the arrangement is the
22 third party handles the project, and the only equity is
23 owned by the third party, and he is making a steam sale
24 to the steam host, a long-term agreement for just
25 supply of steam.

1 THE CHAIRMAN: Go ahead.

2 MR. WATSON: Q. Mr. Brown, you are
3 saying the host would get the benefit of steam. What
4 sort of accommodation is the host getting? I assume
5 they are getting steam at a reduced rate, or is there
6 some other accommodate made?

7 MR. BROWN: A. I am not sure of the
8 individual particulars. It could be as good as having
9 free steam if the third party developer saw that as
10 being a benefit to him and his way of getting the
11 project to go ahead, or it could be a financial
12 agreement to buy the steam at a certain price.

13 Q. So what you are saying, it is a
14 matter of negotiation between the host and the third
15 party developer?

16 A. That's true.

17 Q. And it is up to those two entities to
18 determine what their particular contractual provisions
19 are going to be, and you are interested in whether the
20 third party developer has a firm steam contract and
21 thereby can produce electricity?

22 A. We are looking for a long-term
23 project, so part of that requirement is that he will be
24 able to prove to us that he has a long-term steam
25 contract and a long-term gas contract.

1 Q. We have been discussing a lot of
2 economic criteria with respect to building NUG
3 facilities. Is it possible that there could be other
4 criteria for people building NUG facilities?

5 A. Yes.

6 Q. And is it also true that even if the
7 required rate of return might be met there could be
8 other barriers to development?

9 A. That's true.

10 MR. WATSON: Mr. Chairman, I suggest this
11 is a good place to stop. I am about to turn to another
12 topic, but just before I do that I would just like to
13 ask one more question about page 37.

14 Q. Mr. Brown, there is something you
15 could help me with and perhaps you could help the Board
16 with as well. If you could look at page 37 of Exhibit
17 340, that's the "Cogen Potential" graph, and it shows
18 megawatts versus rate of return.

19 Now, I must confess, when I first looked
20 at that intuitively it looked as though it was
21 incorrect. You know, I said to myself, well, as the
22 rate of return increases shouldn't you get more
23 megawatts? And your graph doesn't show that.

24 My consultant was able to explain it to
25 me. Perhaps you could just explain it to make sure

1 that I have got it straight.

2 MR. BROWN: A. What we were trying to
3 identify with this graph is the rate of return that
4 would make a project economic, and what it indicates to
5 me is that if you reduce the rate of return required
6 then more and more projects would be economic.

7 Obviously, if a project didn't require
8 any rate of return we would build it anyway, and that's
9 why it is high at that end.

10 So the more the rate of return required
11 by the proponent, the less economics that are in there.

12 MR. WATSON: Mr. Chairman, subject to any
13 questions you may have out of what has arisen so far,
14 it is a quarter after 5:00 now, and I will be prepared
15 to start tomorrow morning at 9:15.

16 THE CHAIRMAN: I always get a little
17 frightened doing this, but tomorrow morning we will
18 start at 9:15 - 9:15 tomorrow morning. Adjourned until
19 then.

20 MR. WATSON: Mr. Chairman, I can report
21 that things seem to be moving along well,--

22 THE CHAIRMAN: Good.

23 MR. WATSON: --as far as time is
24 concerned. (Laughter)

25 THE CHAIRMAN: Good.

1 THE REGISTRAR: The hearing will adjourn
2 until 9:15 tomorrow morning.

3
4 ---Whereupon the hearing was adjourned at 5:14 p.m. to
5 be reconvened at 9:15 a.m. on Thursday, October
6 17th, 1991.

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